HOUSE DECORATING AND PAINTING

W. N. BROWN

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BY

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"THE ART OF ENAMELLING ON METAL" "THE HISTORY OF DECORATIVE ART"
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CHAPTER I

TOOLS AND APPLIANCES

THE chapters which I intend writing under the above heading will be intended primarily for beginners—apprentices, improvers, and others—who may be professionally engaged in one or other branches of the house painting and decorating industries, but, secondarily, for those men who, not being painters or decorators, yet know somewhat of the trades, and are wishful to learn more, or, knowing nothing, desire to become acquainted with the art, either to increase their incomes, supplement their knowledge, or improve their homes: for these this book will be written, and I trust that my efforts will be of some account to those before mentioned, and that the succeeding lines will contain something to suit all tastes. With this brief introduction, I will at once pass on to my subject.

TOOLS, ETC.

The practice of decorating the interior and exterior of public and domestic edifices in various colours and with ornamental designs is of the greatest antiquity. It was practised alike,

with more or less elaboration and success, by the ancient Egyptian, Assyrian, Babylonian, Greek, and Roman.

Concerning the pigments and media employed by the first three nations comparatively nothing is known, but it would appear that for some descriptions of mural painting the ancient Greeks mixed their pigments with wax, and applied the paint in a hot state.

Much of the Roman mural work in the disinterred cities of Herculaneum and Pompeii is as fresh to-day as on that on which it was executed, although nearly two thousand years have rolled away since the walls were painted. It is known that most of the Roman colours were the mineral pigments in use at the present time amongst ourselves, and that amongst their media were milk, the yolks and whites of eggs, and fig juice.

Our own ancestors, like the Scandinavians of to-day, were very fond of bright hues for external work, although, as the colours applied to the outsides of their houses could only have been distemper colours, it is difficult to imagine that they could have been very permanent in a climate like ours. The brothers Van Eyck, the celebrated painters, first adopted oil as a medium in the fifteenth century, and their discovery revolutionised pictorial art. Of course the house painters were not slow to utilise the new process in their own trade, and from that time onward linseed oil has been the universal medium for carrying the colours alike of the artist and the house painter. To pass now to the subject of tools proper.

Paint Shops. — Little need be said of the house painter's workshops, as so much of his business is carried on out of doors and away from home. But the workshops where any painting operations are carried on should be well lighted, and, above all, *very airy*, the last qualification being a *sine quâ non*, not only to ensure the rapid drying of the work, but also to secure the health of the workmen, as so many of the materials

which are employed are more or less prejudicial to health. In winter some method of heating is absolutely necessary. Ample provision of shelves, pigeon-holes, and drawers is required as receptacles for paint pots, varnish and oil cans, brushes, and dry pigments, etc.

Tools.—The principal tools required are cans, pots, brushes, combs, etc. Also a grinding slab and muller, or, if possible, a paint mill. For outdoor work, steps, ladders, boards, slings, and ropes are also necessary. One of the most tedious and laborious portions of the old house painter's business was the grinding and mixing of his paints. White lead, especially, required long and careful grinding. This part of the labour is taken out of the hands of the modern painter by the dealers, as the workman can procure his white lead ready ground by steam machinery at the mills. But it is still necessary to thoroughly amalgamate whatever "stainer" (or pigment) the house painter may use, to obtain any special colour, with the white lead and oil which form the basis of all paints. Some pigments, too, require much breaking up and grinding, although the majority of them can now be obtained of the colourmen in a state of finely comminuted powder, almost impalpable, which greatly reduces the painter's labour. At Fig. 1 is shown the ordinary grinding slab and muller. The

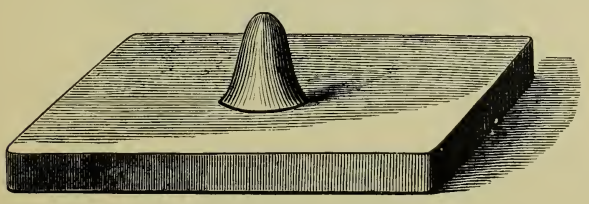


FIG. 1.—Slab and Muller.

former is preferably of marble, and the latter of either marble or granite. Generally speaking, these articles are only found in

old-fashioned workshops, their place having generally been superseded by the paint mill, which is now made in a variety of forms and sizes at a very moderate price. It should invariably find a place in every house painter's shop. Of knives the workman will require several, a group of which are illustrated at Fig. 2. In this, A is a large palette knife, not unlike that

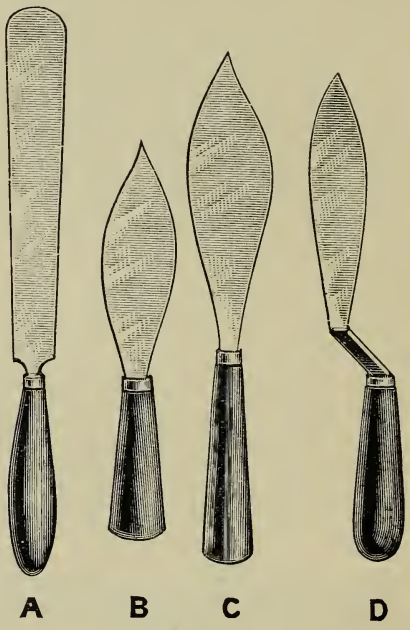


FIG. 2.—Knives.

employed by an artist's paint grinder. It is used by the house painter's assistant when grinding paints, to scrape together the paint on the grinding-stone, and is generally termed a "stone knife." B and C are knives used for "stopping" the holes in new work with putty, white lead, etc., and are termed "stopping" knives, and D is employed for the same purpose,

and is known as a "trowel" stopping knife, from its form. Brushes of various kinds form a very important item in the house painter's plant, and they are considerably varied in size and form. By far the greater number of painting brushes are

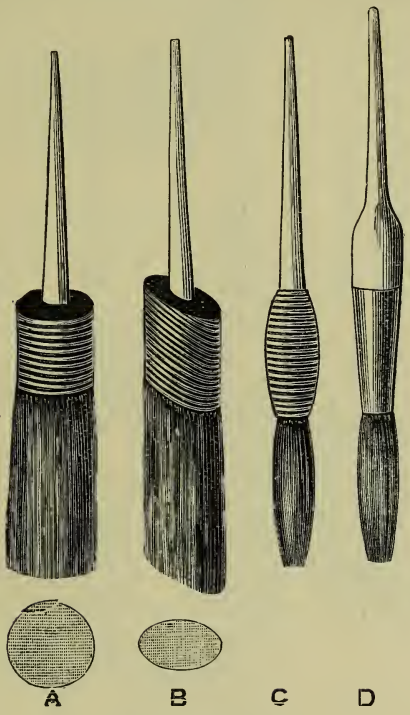


FIG. 3.—Brushes.

made of hog's bristles, and of all those supplied by the porcine race those of the Russian wild boar are the most esteemed, on account of their length, stiffness, and elasticity. They also run very equally in length. They are, however, as a rule, very dirty and crooked when imported, the latter defect being due

to the fact that the bristles grow on the hind quarters of the boar and cling to the body. They are divided into classes according to length, namely :—First, from 5 in. to 8 in. long, and stiff; second, from 4 in. to 8 in. in length, also stiff; third, from $4\frac{1}{2}$ in. to 8 in., flexible. They are obtained from two

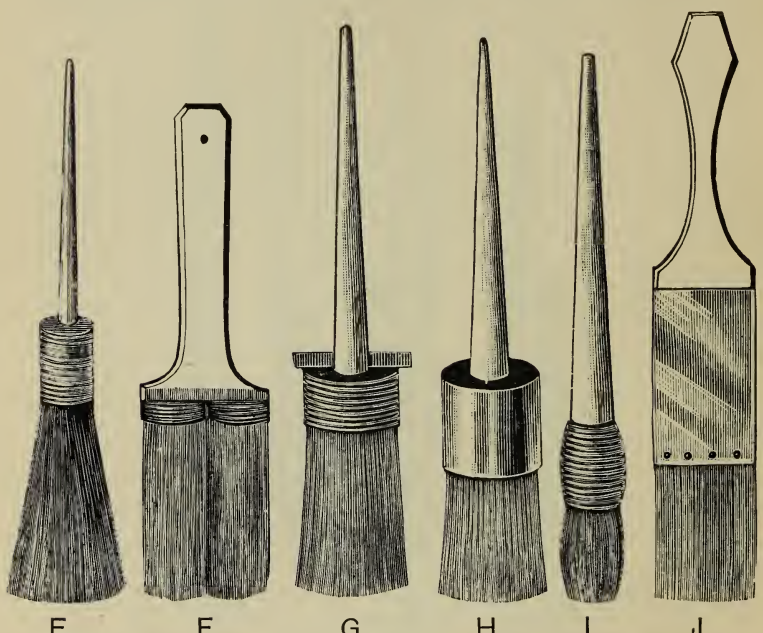


FIG. 4.—Brushes.

sources—from slaughtered animals, and from the forests, where they are found and gathered by the peasants. The boar sheds his bristles at least every year, rubbing them off against trees and other objects. St. Petersburg is the principal bristle market of the world. There are also German and Polish bristles, and a certain supply of valuable short bristles comes from the South of France. Russian bristles are first boiled to

cleanse them and to render them more flexible; they are then tied up in small bundles, and are dried by hanging them up

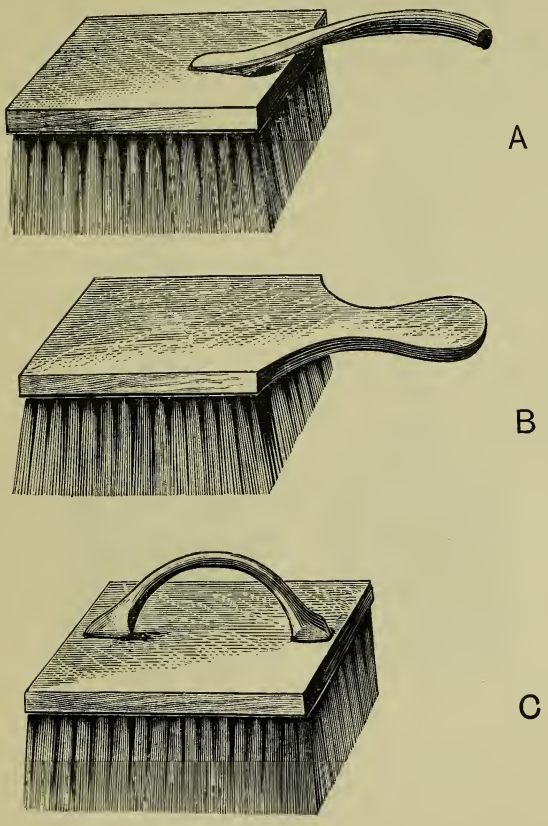


FIG. 5.—Stipplers.

for a time in a heated room. They are, moreover, bleached by exposure to the fumes of burning sulphur. For certain branches of graining, sign-painting, writing, etc., the hair of

the camel, badger, and sable are employed. Sometimes the hog's bristles are adulterated with various fibres, but, as a general rule, painters' brushes are what they are represented by the dealers to be. Brushes are classified by numbers, as 1-0, 2-0, etc., up to 8-0 or 10-0, this being the largest size, and the one in most general use by the house painter. They are made both round and oval in section, across the hairs, and

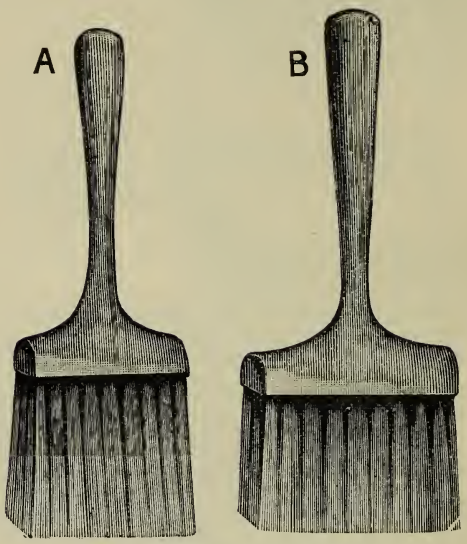


FIG. 6.—Softeners or Blenders.

bound either with string or copper wire. The oval brushes are generally preferred at the present day. A group of brushes is shown at Fig. 3, where A is a round brush, and B is an oval brush bound with copper wire. The smaller description of brushes are called "sash tools," or, more generally, tools; C is a tool bound with string, and D one of larger size bound with a tin ferrule or band. The "dusting brush" shown at E (Fig. 4) is employed for dusting the work, and has the hairs so set

in that they spread at the ends. Distempering brushes are generally flat, as shown at F (Fig. 4). Some distemperers, however, prefer a round brush. Various descriptions of varnish brushes are made, to be employed in the application of varnish. Like the paint brushes, they are now generally oval, but are sometimes flat. G, in Fig. 4, shows a varnish brush bound with copper wire, and H one bound in tin. Small varnish "tools," as I, are made in sizes from No. 1 to No. 2, and a flat brush, "pinned," as at J in the same figure, is likewise frequently used for varnishing. Of comparatively recent years, a species of brush termed a "stippler," the object of which is to obliterate any brush marks which might have been left on a painted surface, has come into use. The stipplers consist of hairs closely fixed in a flat back, and having a perfectly flat and regular surface of hairs, as in Fig. 5, where three descriptions are shown. This tool is gently dabbed over the painted surface while it is still wet, and leaves it everywhere with an equally stippled surface, yet without any too pronounced surface. Handles are affixed to stipplers in different ways, as shown at A, B, and C in the illustration. A very useful form is that made with the reversible handle, which enables it to be worn most evenly. Badger hair softeners generally take the form of those shown at A and B in Fig. 6, the latter being a long hair softener or blender. The various over-grainers, combs, etc., employed by the grainer and marbler will be described later on in the section devoted to those branches of the decorator's art. The camel's hair and sable pencils and stripers used by the facia writer, etc., will also be described under their proper headings in due course. In old work, covered with many layers of paint which has become hard and thick, it is frequently necessary to burn off the old paint, for which a blowing apparatus will be necessary. For this purpose the French patent self-acting blowing apparatus, as it is termed, is very useful. This is represented

at Fig. 7, and is a species of spirit lamp, which carries a jet of peculiar structure, by which the flame is so spread and flattened that the heat is dispersed over a large surface. In working at premises where gas is laid on, a very good and handy plan is to have a length of flexible indiarubber tubing sufficient to extend from the nearest burner to the work. This should terminate in a broad "bat's wing" burner, as roughly

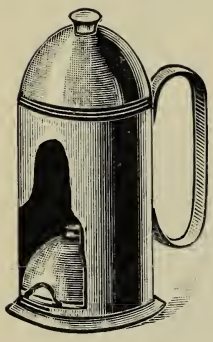


FIG. 7.—Blowing Apparatus.

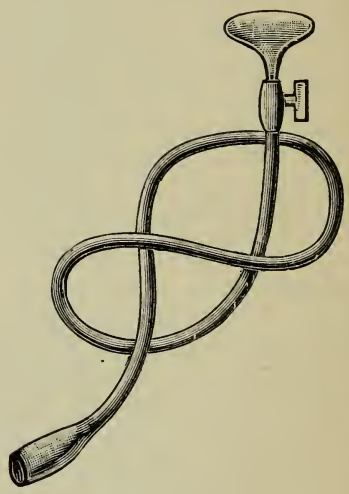


FIG. 8.—Tube and Burner.

sketched at Fig. 8. One end of this can be slipped over a burner in the house, the gas turned on at the main, and ignited at the burner. For writers, decorators, and others who are compelled to carry on their labour after dark, the candlestick shown at Fig. 9 is very convenient, as the reflector can be shifted so as to throw the light in any direction that may be desired. The sign painter and writer sometimes finds it necessary to employ an easel, when one of a similar construc-

tion to that illustrated at Fig. 10 will be found very useful, and which requires no further description here. Scaffolding ladders and steps of various descriptions are required for both

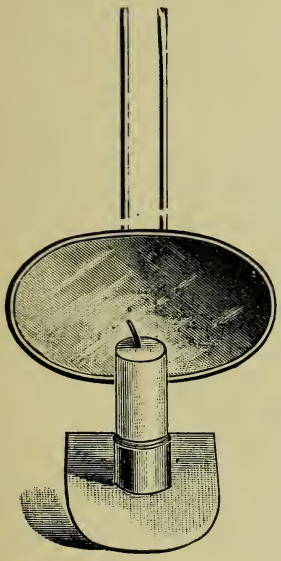


FIG. 9.—Candlestick.

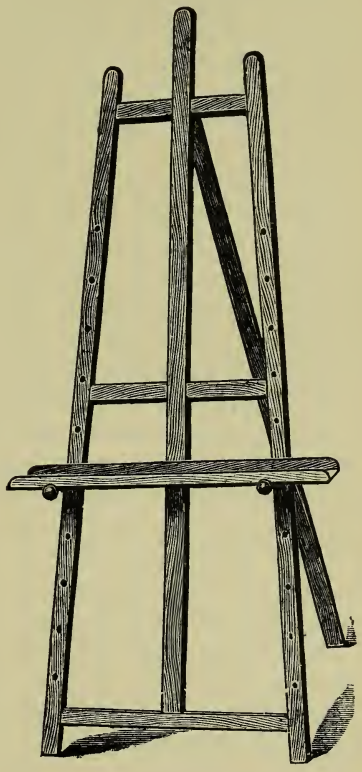


FIG. 10.—Easel.

indoor and outdoor work, and planks, staging, and scaffolding for the latter beside. All that need be said respecting these is to impress upon the painter, whether master or man, the utmost necessity of exercising sleepless vigilance as to the

security of all plankings, and so as to ensure that neither the workman nor the public should by any possibility be injured by any accident.

It is a bad plan to keep the ladders, planks, and jacks used in house painting always carefully painted—for this reason: that appliances made of wood are liable to decay and the attacks of insects, and even if this were not so they inevitably succumb to the effects of time and long use. If they are at all times kept well painted, these defects will be hidden, and an accident may thus easily occur. On the other hand, if the ladder or other appliance be left in its natural state, or merely protected by being oiled or varnished, any defect will be easily perceived. Ropes used for suspending swings, stages, etc., not infrequently break without notice, and lamentable accidents are the result. The atmosphere and other influences act prejudicially upon hempen fibre, and it is always best to keep all ropes well tarred. This is best effected by passing the rope through a bath of boiled tar, hot, and drawing it through a "thimble" to press back the excess of tar, and suspending it afterwards on a staging to harden and dry. Some prefer to dress their ropes with a solution of sulphate of copper (blue stone), fixed by a bath of soapy water. This has doubtless a very preservative influence. With respect to paint pots and cans, it may be remarked that the old-fashioned earthenware paint pot or pigskin is rarely carried out of the workshop. For outdoor work the painter generally prefers a round tin can with a drop wire handle, as being easy to carry, and with a hook to hang on the rung of a ladder, etc. A well-known firm has brought out a kind of combination can, which is termed the "Hold-all" paint pot, which is oval in shape, and is divided at one end, the larger division being for the paint, while the smaller part is for keeping the brushes in water, while water may also be kept in this division when the can is not in use, and the water can also be run off without tilting the can. There is an attachment to

the larger end having a loose top with a socket for a tool, and this is employed for knotting. The other attachment, which is divided into two parts, it is suggested, may be used for putting colours in, such as may be wanted at the time. The apparatus altogether is a very handy one.

CHAPTER II

COLOURS AND THEIR HARMONY

OF course, from the very first employment of pigments or dyes by the more ancient peoples—as, for example, those of Egypt—actual use could not fail to supply them with some practical and rule-of-thumb knowledge of the harmony of colours — that is to say, the art of so applying colours to surfaces that the combination should not appear unpleasing to the eye of taste.

As a simple matter of fact, this practical knowledge plainly stood the decorators of the ancient nations of the Nile Valley which I have named in very good stead, for although the Egyptians' palette was very sparsely furnished—they employing little more than the three primary colours, red, yellow, and blue—the general effect of their wall paintings is always good and pleasant.

However, of anything like a philosophical *theory* of colour such as forms the scientific basis of most modern decoration the ancients were profoundly ignorant, and, indeed, it was not until the seventeenth century of our own era that any step was taken in this direction.

Still, now that we have acquired this scientific theoretical knowledge, the possession of some idea of it is indispensable to the ambitious decorator who would excel in his art and secure orders for good work. It is perfectly impossible to decorate on a good job so as to please the eyes of tasteful and

refined patrons without being in possession of at least the rudiments of this knowledge, and hence I shall make a very slight and elementary sketch of it a part of my programme in this book.

The ancients believed ordinary light (such as that of daylight) to be a *white*, and considered the colours which various objects assume by day—such, for instance, as the blue of the sky, the green of foliage, or the red of certain bricks — as inherent in them.

It was reserved for our great natural philosopher, Sir Isaac Newton, to demonstrate that, on the contrary, this supposed

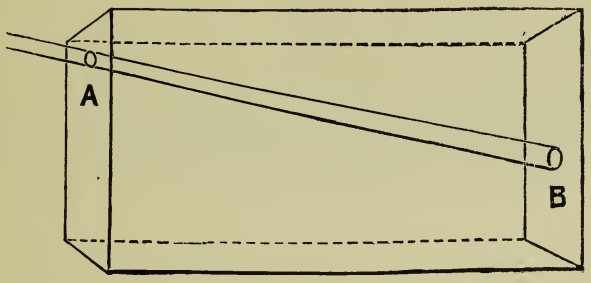


FIG. 11.—Spectrum of Ray.

white light was compound and a combination of all the colours, and that the reason why different objects appeared to be differently coloured was that peculiarities of texture or structure caused them to absorb certain of the coloured rays, and to reflect others, the reflected ray giving the colour which the spectator assigns to the object. The apparatus by which Sir Isaac Newton demonstrated the compound nature of light is shown at the diagram Fig. 11. Through a small round hole in the shutter of a darkened room, a beam of light, A, is permitted to enter. If this falls on the floor or the opposite wall, it will appear as a round spot or spectrum, B, of white light.

Suppose, now, that just inside the hole we interpose a prism of glass as at Fig. 12, so that the ray of light must pass through it. The prism, we may remark, is a stalk of clear flint glass, a few inches in length, and of a triangular section, as at Fig. 12. It is fixed behind the aperture through which the ray

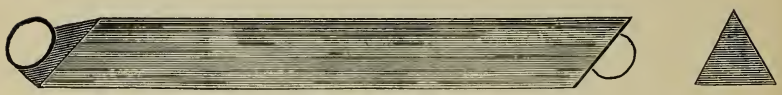


FIG. 12.—Prism.

enters, so that its refracting angle is uppermost and horizontal. The ray of light is thereby reflected and dispersed, and if the refractory angle of the prism be 60°, a parallelogramatic "spectrum," as at C in Fig. 13, will be the result on the screen

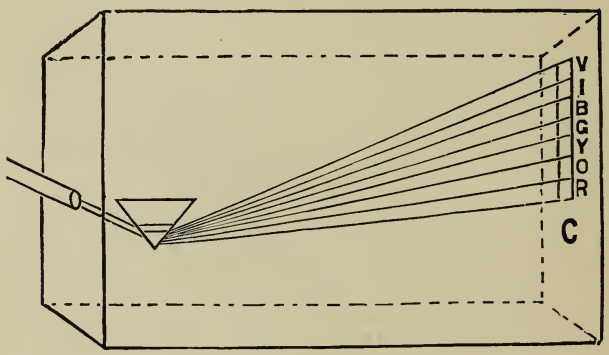


FIG. 13.—Solar Spectrum.

on the opposite wall, this spectrum being a vertical band of coloured strips of the varied colours of the rainbow.

This solar spectrum is a band (Fig. 14) consisting of a very large number of different tints, amongst which, however, it is easy to distinguish seven principal colours. Commencing at

the end of the spectrum, which is nearest to the spot B in Fig. 11, which the ray would have reached had no prism bent it out of its path, we find the order of the colours to be as follows:—Red, orange, yellow, green, blue, indigo, and violet. Now, the mode in which these colours have been produced from white light is a sufficient proof that they cannot be separated into any other kind of colour. This may, however, be proved by actual experiment, for if, as at Fig. 15, one of the colours of the spectrum V be allowed to pass through a hole in the screen X, on which the band of decomposed light has been thrown, it cannot be altered by being transmitted through a second prism Y. The ray will be refracted, of course, but it

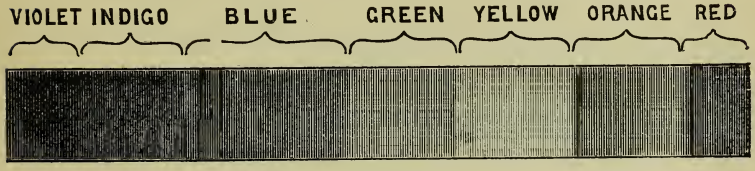


FIG. 14.—Solar Spectrum.

will show but one colour, as before, and the image will be elongated as at Z.

The solar spectrum shown at Fig. 14 is then a band of varied colours, amidst which the seven enumerated can be readily discerned, always running in the order given. The rainbow seen in the clouds during a shower is a similar band produced by the falling raindrops acting the part of so many prisms and decomposing the sunbeams so as to produce the coloured "bow."

After Newton, chromatic science did not for a long time make any further advances. At length scientists discovered that the number of primary colours, which according to Newton are seven in number, could be reduced to three "primary" or principal colours, the other four being "second-

ary" colours, or those formed by the combination of the primaries. It has been generally held that the primary colours are red, yellow, and blue, the combinations of which form the other colours of the spectrum.

A very simple diagram, shown at Fig. 16, will elucidate this, and also render us help in some other matters which may crop up. It will be seen that this diagram (Fig. 16) is composed of three circles, struck from the angles of an equilateral triangle so that they mutually intersect. If the circles be respectively coloured yellow, red, and blue, with

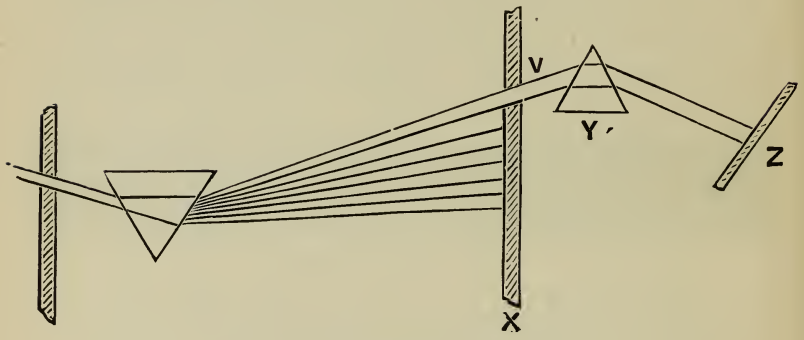


FIG. 15.—Unalterability of Colours.

some pure transparent pigments, or, still better, if three discs of properly coloured glass be cut out and superposed, it will be found that the intersections of the primaries yellow and red give us the secondary orange; the intersections of the primaries yellow and blue give us the secondary green; and the intersections of the primaries blue and red yield the secondary violet: this diagram is really the basis and foundation of philosophical views of the principles of the harmony of colours, and is hence fundamentally important.

Colours are related to each other in a connection which is known as that of complementary. That is to say, they can

be arranged, in relation to the human retina or eye, in pairs, of which one is complementary to the other, or makes up for it. Thus, if the eye be fatigued by gazing for some time on one hue, the presentation of the complementary colour to the eye brings rest, satisfaction, and pleasure. More than that: if the eye be fatigued by too prolonged gazing on one colour, and be then turned to a white or neutral surface, it will of its own action project a spectrum thereon of the same form

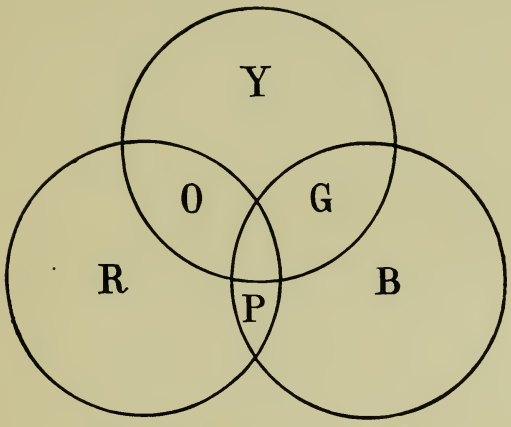


FIG. 16.—Primaries and Secondaries.

as the object it has been gazing upon, but of the complementary colour. This is easily verified. Stick a red wafer and look at it intently for a few minutes. Then turn your gaze to a sheet of white paper, and you will see on it a round spectrum of green colour, green being the complementary of red. Do the same with a yellow wafer, and a violet spectrum will result, violet being the complement of yellow. Again, gazing at a blue wafer will yield an orange spectrum, that colour being complementary to blue. Well, the diagram (Fig. 16) gives us the three primaries, red, yellow, and blue,

and their secondaries, orange, green, and violet (P); and it will be observed that when the colours are thus arranged each complementary colour is opposite to its primary, which renders the arrangement easy to bear in mind. The importance of this matter of primary and complementary colours to the decorator is that the juxtaposition of a primary and a complementary colour is always harmonious and pleasing to the eye, and should be carefully studied. This matter may be

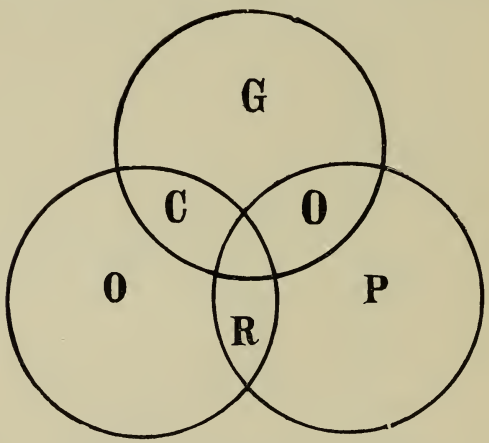


FIG. 17.—Secondaries and Tertiaries.

still further advantageously elucidated by striking three other circles similarly arranged, as at Fig. 17. Here the circles are tinted with the three secondary colours—orange, green, and violet (P). Their intersections give us the three tertiary colours as shown, namely, russet, citrine, and olive. It will be observed that here again the tertiary colour found opposite to a secondary is complementary to it, and used in conjunction with it will yield a harmonious combination. The secondary colours orange and violet produce when mixed together the

tertiary hue known as "russet." It is a kind of greyish red, and may be seen in the skin of certain ripe apples, and also in some fading autumnal leaves, as those of the Virginia climber. Its complementary is green, which supplies the yellow and blue wanting in russet. The secondary colours green and violet produce, when mixed together, the tertiary hue known as olive, which is a kind of greyish blue. Orange is the complement of this, and supplies the missing red and yellow elements. The secondary colours orange and green produce, when mixed together, the tertiary hue called citrine, which is a greyish yellow. Violet is the complement to citrine, supplying as it does the missing blue and red. The very useful (in a decorative sense) hues known as "buff," "plum," and "sage," may be considered as modified tertiaries. Buff may be produced by the addition of red to citrine, sage green by the addition of yellow to olive (or slate colour), and plum colour by the addition of blue to russet.

It must be borne in mind that in the preceding observations in speaking of colours only the pure prismatic hues found in the solar spectrum are alluded to. But the decorator cannot hope to utilise colours of such exquisite purity. The pigments to which he has recourse as "stainers" for his variously coloured paints are often as impure in hue as in composition, and he can only do the best practicable, according to his judgment, to get the nearest approximation in all cases to his own ideal of the colours required.

The effect which remains temporarily upon the retina of the human eye after regarding any specific colour, to which I have alluded, is a consideration of considerable importance to the painter in arranging the juxtaposition of his colours in any process of decoration, because if the eye turns from, say, a plaster of a certain colour to a panel of another, the effect of the first colour which remains on the eye may materially affect the second. Thus, if the eye has been gazing upon

yellow, it will see orange as reddish orange, red as reddish violet, violet as bluish violet, blue as violet blue, and green as bluish green.

Space will not permit me to go through the other six prismatic colours, but a little consideration will enable the reader to compile a list for himself. An important matter for the decorator to make himself intimately acquainted with is the *proportions* in which various colours harmonise. Again I regret that space will not permit me to treat this interesting subject with any degree of fulness. The following brief remarks will, however, convey much condensed information on this important point: 8 parts of blue harmonise with 5 of red or 3 of yellow, or amongst secondaries with 8 of orange; 5 parts of red harmonise with 11 of green, 3 of yellow with 13 of violet, 13 of violet with 19 of citrine, and 11 of green with 21 of russet.

The following remarks by Mr. Church, M.A., explanatory of the diagram shown at Fig. 18, bear on this subject, and are worth reproducing. If we refer to the diagram "we shall be able to point out very clearly the constituents of each compound colour. The three small triangles marked I contain the three primary colours, while those marked II contain the three secondary colours. When equivalent quantities of yellow and red are mixed, orange is the result—a secondary colour equally distant from yellow on one side and red on the other. It is commonly held that in material pigments, three parts (by surface measurement) of a good yellow require five parts of a good red to form the normal orange. The eight parts of the normal orange formed in this way will serve as a complementary equivalent to eight parts of the normal blue. But, after all, these and similar numbers are merely approximate, serving just to indicate the direction in which one coloured constituent must preponderate over another in such mixtures as the secondary

colours. When yellow and red are mixed in proportions differing from those necessary to constitute the normal orange, the resulting colour becomes a yellowish orange or a reddish orange, according to the predominance of either of the constituent primaries; countless variations of a secondary colour in this direction are possible."

It is necessary to add that some *savants* who have written

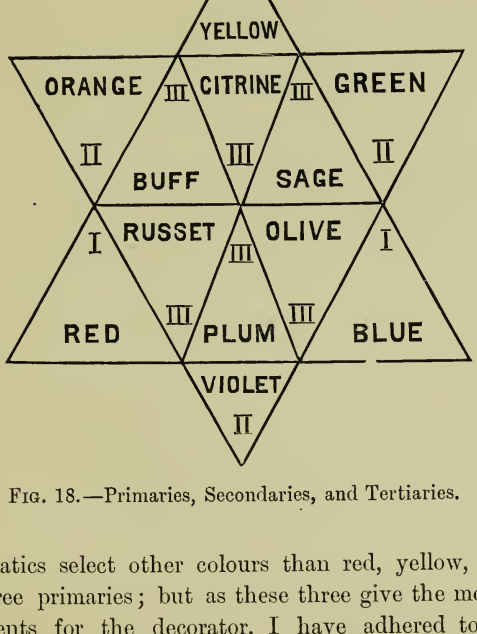


FIG. 18.—Primaries, Secondaries, and Tertiaries.

on chromatics select other colours than red, yellow, and blue as the three primaries; but as these three give the most useful arrangements for the decorator, I have adhered to the old and ordinary classification.

This chapter is, of course, only a very brief and sketchy résumé of a large subject. If any reader is desirous to pursue the matter further (and I should strongly advise all young

painters and decorators to do so), they may refer to Hay's *Harmonious Colouring* (somewhat old, but excellent), Chevreuil's capital and standard work, and the papers of Professors Clark Maxwell and Helmholtz. Mr. Church's papers on "Colour" and those by Dr. Dresser may also be perused with advantage.

CHAPTER III

PIGMENTS AND MEDIA

COLOURING the walls, whether external or internal, of edifices is a custom of the highest antiquity, and it appears not improbable that the ancient colourists employed some of the same substances for this purpose that we use to-day. The old Egyptians coloured the internal walls of their temples and palaces. Sir Humphry Davy and others have subjected small samples of colour scraped from ancient Egyptian paintings to analysis, and have found them generally to be earthy pigments and metallic oxides similar to those employed by our own house decorators. The pure atmosphere of the Nile Valley has preserved to us until to-day, after the lapse of three thousand years, these colours in all their pristine freshness. The bas-reliefs carved upon the alabaster slabs with which the Assyrians lined the internal surfaces of their palace walls were also coloured and gilded, fragments of both applications having been discovered by Sir Austin Henry Layard during his researches. The ancient Greeks tinted their marble temples and sculptures, the Romans covered their walls with vividly coloured frescoes, and our own Saxon ancestors painted their wooden dwellings in bright hues. I shall now pass on to consideration in brief of the various colours employed.

White.—White is not considered as a colour at all by the optical philosopher, but the house decorator regards it with

reason as practically the most important of all colours. This is mainly because the most important white pigment—white lead—is used as a basis for all other colours by the house painter, and generally constitutes by far the greater proportion of paints of any given colour.

White Lead.—This is a carbonate of lead, termed in chemical nomenclature a "hydrated carbonate of lead," because it contains a portion of water held in chemical combination. This particular chemical combination cannot be brought about by immediate and quick chemical reaction, but must be accomplished by slow processes extending from eight to twelve weeks, according to the following brief sketch of the process.

The first essential is to obtain metallic lead of the greatest possible purity. This is generally procured from the argentiferous (or silver bearing) ores, or galena. The first operation is to cast the lead into a number of small open or gridiron-shaped plates of about six inches in diameter. These "buckles" of lead, as they are termed, have next to be subjected to corrosion. For this purpose, and in order that their weight should not cause them to be too closely pressed together, the leaden plates are stacked in small earthenware pots.

These pots are constructed expressly for the purpose. They are generally about nine inches in height, eight inches in width across the top, and taper to about five inches in width at the bottom; consequently they have somewhat of the appearance of large flower-pots. At about one-third their height there are several projecting knobs in the interior, so that the leaden plates do not rest on the bottoms of the pots.

The corroding house, or bed, is a wooden structure, having sides and a bottom, but no top, as several are generally placed under one roof. Over the floor of the corroding bed is spread

a layer of spent tan-bark from twelve to fifteen inches in thickness. Upon the layer of bark the pots are placed close together. About a pint of vinegar (weak acetic acid) is then poured into each pot, which fills it up to the projecting knobs before alluded to. The leaden plates are then placed in the pots, filling them from the knobs to the top. These pots, thus filled with acid and leaden plates, are then covered with boards. Upon these a fresh layer of tan is spread, which is similarly covered with pots. This is continued until eight or ten layers of pots have been set and the corroding house is full. Each house is furnished with a ventilating flue. Corrosion now commences. The damp tan-bark ferments, generating carbonic acid gas, and at the same time raising the temperature of the house to about 160 degrees. This elevation of the temperature causes the evaporation of the acetic acid, the vapour of which, rising in the pots and circulating through the open lead plates, gradually forms an acetate of lead upon their surfaces. The carbonic acid gas generated, which has no affinity for metallic lead, combines very readily with acetate of lead, displacing the acetic acid, and taking its place in combination with the lead, so that the corrosive coating becomes carbonated lead. The process is a slow one.

Generally speaking, on opening the corroding house at the expiration of three months, about sixty-five per cent. of the metallic lead (by weight) is found to have become corroded. This is scraped off, and the remainder of the plates replaced in the pots for a second corrosion.

When the white lead is separated from the unchanged metal it is crushed and carefully screened, the operation being generally performed under water to prevent the rising of poisonous dust. The white lead is then ground in a mill, and subsequently dried in a kiln.

After this it is ready for the final process, which consists

in mixing it with oil, preparatory to putting it into kegs or packages. The white lead and oil are stirred together until a thoroughly intimate mixture is obtained, which is again passed through the mill.

White lead improves by keeping, old white lead possessing greater body or covering capacity than that just manufactured. The painter should always purchase his white lead of a reliable house, and pay a fair price for it; otherwise he may expect to, and possibly will, get an adulterated article, with which good work will be an impossibility. Whiting was formerly used as an adulterant for white lead, but now a cheap and heavy mineral called barytes is resorted to, a form of adulteration very difficult of detection.

White lead, as I have already remarked, forms the foundation of all paints; the various pigments necessary for the production of other colours, which are technically called "stainers," being mixed with it, with the addition of oil, turpentine, and a proportion of patent driers, until the desired hue and the proper consistency have been attained.

It should always be borne in mind that white lead is intensely poisonous; hence the necessity for the greatest care and cleanliness on the painter's part, especially remembering that white lead will work into the system externally—that is, from the skin.

Zinc White.—This has been added to the list of pigments during the past few years. It is a good colour. Many consider it as durable as white lead, while it has not the poisonous qualities of the latter.

Flake White.—This is an excellent pigment, ranking next to white lead in body and density. It is often employed as a final coat in good work, where a pure white is required. In such cases, however, white lead is used for the earlier coats.

CHAPTER IV

PIGMENTS AND MEDIA

FOLLOWING after white, we come in natural sequence to black, which of itself, scientifically and chemically, does not constitute a colour, being made up by the formation of all colours, being thus the reverse of white. The utility of the two colours—or, rather, no colours—to the house painter and decorator differs very widely. White is of great use for itself, and of still greater use as a pigment for mixing and incorporating with other colours in order to reduce their intensity and to render them less pronounced. Black, on the contrary, is too dull and gloomy to be extensively used, and its uses in combination are not very many. The ancient world disliked black as much as we, and in fact the colour, if such it can be called, is only of use, judiciously employed, to throw up borders or margins, for bold stencil designs, and in the imitation of certain marbles. I shall now proceed to a brief consideration of the various descriptions of black employed by the English decorator and house painter.

Lamp Black.—This is made from the soot of oil collected as it is burning; and if not properly calcined as it is collected, it turns to a brownish hue. This lamp black can be made from the soot of the resinous portions of fir or other coniferous trees. It will mix well with either oil or water, and will answer for most purposes where a black is required. Its only fault is its fatness, which causes it to be a long

time in drying, but this can be corrected by the use of driers.

Vegetable Black.—This pigment, which is of a comparatively modern origin, is now very extensively employed, being unquestionably superior to lamp black. An authority upon the subject, Mr. Collingham, remarks: — "It is not quite so intense as ivory black, but possesses more friendly and agreeable qualities. The best way to procure it is to buy it in a dry state, in which it resembles soot, and is so exceedingly light that an ounce or two will fill a gallon measure." It is free from grit, and consequently does not need to be ground, only requiring to be rubbed up with a palette knife on a marble or ivory slab. It should never be diluted with linseed oil, because if it were it would never dry, and it is also not advisable to employ turpentine, but always the best boiled oil; and a little varnish will improve it. A small quantity of driers should be added, to ensure its drying with uniformity of surface.

Ivory Black.—This is composed of the coal of burnt ivory or bone. It is a very rich black if obtained pure, but it is seldom found in that condition. It is sometimes known as "drop black," from its being made in the form of drops. It is esteemed the best of the black pigments. As it is expensive, lamp black will generally answer the purpose quite as well for most of the colours required in house painting. It is the very opposite to vegetable black in the matter of preparation, for being very hard and somewhat gritty in some samples it requires long and careful grinding, and pains should be taken that the operation should be persevered with until perfect impalpability has been attained. It should be ground in turpentine and thinned for use with the same, gold size, and a little varnish; the turpentine must not, however, be in excess, but there must be sufficient gold size and varnish to "bind" the pigment. Linseed oil must on no account be employed with ivory black.

Frankfort Black.—This is manufactured from the lees of wine, and is principally employed for the ink of the copper-plate printers.

Blue Black.—This is a well-known and levigated charcoal, and is much used. It is a cool neutral black We come now to the

Yellow, which is the first of the primary colours, nearest to white, and from its vividness one of the most conspicuous in the solar spectrum. It is also of great importance as a factor in the composition of compound colours. Thus mixed up with the primary red it produces orange; in combination with the primary blue it yields the important secondary green. Furthermore, it is a ruling colour in many of the tertiaries. The following list, however, comprises the principal yellows employed in house painting and decorating.

Yellow Ochre (termed also, from its origin, *Mineral Yellow*).—This is a native earthy pigment, very widely distributed, and found abundantly in Great Britain, and especially in Shotover (Château vert) Hill, near Oxford. This latter fact has led to the name of Oxford ochre occasionally being applied to the pigment. Similar ochres are found in the Isle of Wight, near Bordeaux in France, and at many other localities. When free from other earths it is a true yellow of moderate brightness, and its texture fits it for all kinds of painting. It will not "fly" in the least, and may be used as either an opaque or a transparent colour. When, from admixture, it partakes of a brown colour, it is often called spruce ochre, and this variety is often of a warm cast. The action of the sun will sometimes darken this ochre in a certain degree, but it is impaired neither by impure air nor by the action of time.

Chrome Yellow.—This useful pigment may be procured in coloured lines of three degrees of intensity—pale or lemon, middle, and deep. It is a colour of modern introduction, and in its several varieties mainly consists of chromate of lead. It

can be employed with either oil or water. The chromes, although remaining unchanged for a considerable period, are liable to succumb to gas-heated or other impure air, and to turn black. When employed in the composition of greens, also, it is liable eventually to destroy some blues, especially those known as Prussian and Antwerp. It is a pigment very easily ground.

King's Yellow.—A sulphuretted oxide of arsenic, known also as *Chinese yellow*, *arsenic yellow*, and by the still more ancient name of *yellow orpiment*. It is a pure, bright yellow. It is not, however, very durable, in either water or oil. It will stand tolerably well when used alone; but if mixed with any mineral colour, especially white lead, it instantly "flies." It rapidly suffers discoloration in impure air. It compounds to a good green, and was probably employed by the early artists in this relation. Although not so poisonous as is white lead, its effects upon the health are prejudicial.

Dutch Pink.—This was formerly much in favour as a colour for distempering. It is whiting tinged with a solution of French berries.

Naples Yellow.—This is a compound of the oxides of lead and antimony, and was anciently prepared at Naples under the name of ciallolino. It is considered to have been originally a volcanic product of Vesuvius, Ætna, and other burning mountains. It is not a vivid colour, but a pleasing, soft, and warm yellow tint. It has a good body, and covers well. It is not affected by the sunlight, and may safely be employed in most compounds, but when used with the oxides of lead it will blacken terribly in impure air, which fact requires to be kept well in mind. Iron is also inimical to Naples yellow, for which reason a spatula of ivory is used in grinding it, instead of the ordinary steel palette knife. For the same reason it should not be compounded with those blue pigments into the composition of which iron enters. It is a

good and proved colour in oils, and both works and dries well.

Terra Sienna (often called *Raw Sienna*).—This is a native ferruginous (or iron impregnated) earth brought from Sienna, or Siena, in Italy. It has been in use from a very early period. It is a warm yellow, is a transparent colour, and is especially valuable in distemper, and also in oils as a glazing colour. It is but little liable to change by the action of light, time, or impure air.

Burnt Sienna.—This is the same earth as the preceding, only calcined. It is a rich brown, almost approaching to red.

Yellow Lake.—There are several pigments included under this title. Their colour is generally a bright yellow, and very transparent. They will sustain bad air, but oxygen and light rapidly affect them prejudicially, and even destroy them. In oil they are bad driers, and will not agree with white lead or other metallic oxides.

We pass on now to a brief consideration of the various kinds of

Red employed by the painter. Red is one of the primary colours, being intermediate between blue and yellow. It is the most positive and pronounced of all colours, and always brings itself into notice. It is accounted a "warm" or "near" colour, and forms with yellow the secondary *orange*, and its derivatives, *scarlet*, etc., while with blue it forms the *purple* and its allies *crimson* and *mauve*. It is the key colour in the tertiary *russet*, and more or less enters into the composition of the tertiaries *citrine* and *olive*, also into such hues as *maroon*, *chocolate*, *puce*, etc. We now pass on to the various colours.

Vermilion.—A sulphuret of mercury, which previous to levigation is known as *cinnabar*. Vermilion was well known to the ancients, and by them very highly esteemed. A native cinnabar found in China is so pure that it only requires

grinding to become excellent vermilion. This pigment can be artificially manufactured from mercury and sulphur, but it can be effectively produced only in large quantities and by means of expensive apparatus; consequently it is never a cheap pigment. It is a bright scarlet, and an extremely useful colour in every kind of artistic painting, in both oil and water. It is a colour that may be depended upon for durability if the quality of the pigment be good. Mr. Field, an undoubted authority, says, "Neither light, time, nor foul air effects sensible change in *true* vermilions, and they may be used safely in oil, water, or fresco, being colours of great chemical permanence. As, however, vermilion is expensive, there is, of course, great temptation to adulteration; and we therefore commonly find it adulterated with red or orange lead, to its great detriment. It may thus be tested: — Place a little vermilion on a piece of paper and lay the latter on a smooth slate or a dinner plate. Place a card on the top of the heap of pigment, and rub the card with handle of a penknife or other similar and smooth object. When the bit of card is removed, the pigment should present a smooth surface; and if the vermilion be pure, it will be of a uniform scarlet. If, however, red lead or other adulterant be present, the surface will have an orange or a yellow cast."

Carmine.—This fine crimson is obtained from the cochineal (*Crocus cacti*), a small insect which feeds upon the cactus. This valuable insect was first introduced into Europe from Mexico in 1523. It belongs to the order of Hemiptera, or "half-winged insects," and is of a deep mulberry colour. Carmine was first prepared by a Franciscan monk, who discovered it accidentally while compounding some medicine containing cochineal, and in 1656 the pigment began to be manufactured. Splendid colour though it be, it is never employed by the house painter.

Red Lead.—As its name imports, this useful pigment is

lead calcined to an oxide. It was known at a very early period, and was anciently called *minium*. It is a peroxide of lead, prepared generally by exposing massicot to the heat of a furnace, with a free entrance of air. It is a good red, but as it will not freely mix with white lead, or any other pigments than those of an ochreous or earthy character, it is not safe to employ it at all extensively.

Indian Red.—This pigment may be classed with the earths usually denominated "ochres." It is a very rich iron ore, hæmatite, or peroxide of iron, and is a native mineral production of Bengal, whence is drawn the greater portion of our supply. Indian red often differs very much in hue, the most rosy being the most highly esteemed. There are two methods of mixing the pigment: (1) with turps, with a little driers, size, or varnish added; (2) with boiled oil and driers. This dries more slowly, and its surface has some degree of gloss.

Venetian Gloss.—This is a native red ochre rather inclining to the scarlet than the crimson hue. It is an excellent standing colour, and requires no preparation other than to be well ground with the oil with which it is to be used.

Lake.—This red pigment is derived from Indian lac. The colouring matter of common lake ("drop lake") is Brazil wood, and it is a fugitive colour. Superior lakes are obtained from cochineal and *kermes*, and the best from the root of the madder plant (*Rubia tinctorum*), which from an early time has been used for that purpose. Lake is a fine glazing colour, and is much employed in marbling and graining.

Red Ochre. — Oxford yellow ochre calcined. It is very permanent.

Rose Pink.—Whiting tinged with the same colours that produce lake. It is useless in house painting, as it is sure to fly. It is used sometimes as a glazing colour, and secured by varnishing.

CHAPTER V

PIGMENTS AND MEDIA

WE now pass on to blue, which is the third and last of the primary colours; and as yellow may be defined as the nearest to white, and hence the lightest of the three primaries, so also blue may be reckoned as the darkest, and that which approaches the most nearly to the negation of colour, or black. Blue is considered, technically, to be a "cold" or "cool" colour, as red is a "warm" one. In combination *blue* with the primary *yellow* forms the secondary *green*; with the primary *red* it produces the secondary *purple*. It enters into the composition of the tertiary *olive*, and it is necessary to such hues as *grey*, *slate*, *lead*, etc. Blue pigments are not very numerous, but are exceedingly useful.

Ultramarine.—Pure ultramarine is the finest blue that can be produced, and much used by artists, both ancient and modern. It is prepared from calcined *lapis lazuli*, a valuable stone; hence the price of ultramarine is invariably high. Of course this fact acts as a prohibition upon the employment of this undoubtedly fine colour by the house painter, unless under very exceptional circumstances. There are a couple of manufactories of artificial ultramarine which produce no less than two thousand tons of the cheaper pigment annually. The house painter therefore has to fall back upon this—which is principally of French and German make — which is reasonable in price and, on the whole, a very fair substitute. The pigment had

its origin in an idea which occurred to M. Guimot, a French chemist, that he could produce a chemical compound which should imitate ultramarine. He tried it, succeeded, and obtained for his discovery the prize of 600 francs offered by the Société d'Encouragement des Arts. Singularly enough, Gmelin made a similar discovery at Tübingen almost simultaneously; hence these factitious ultramarines are made in both France and Germany, as also in America, where it is only employed. They are of a deep rich blue, which becomes darker on mixing with either oil, size, or gum. To avoid this the pigment is sometimes used to excess, but if it be so it will fall off.

Prussian Blue.—This deep blue pigment was accidentally discovered in 1720 by Diesbach, a colour-maker in Berlin, and is hence sometimes called Berlin blue. It is therefore a colour which was not known to the ancient painters. It is generally prepared from the yellow prussiate of potash and sulphuret of iron (green vitriol), but there are also other methods. It is a good blue, and can be employed in either water or oil. It is of a transparent nature, and requires to be mixed with white lead where body is wanted. In England it is generally kept ready ground by the colourmen under the name of "damp blue," but this expression is never employed by our American cousins. In compounding Prussian blue to form green, it should be remembered that it is a very powerful and deep colour, and will absorb or neutralise a great quantity of whatever yellow may be used. Attention to this precaution will tend to economy of pigment by preventing the mixing of a larger quantity than is required.

Antwerp Blue. — This is a lighter and somewhat brighter variety of Prussian blue, containing alumina.

Brunswick Blue.—This is a similar pigment, but is not much used.

Indigo or Indian Blue.—This is produced from a plant of

the same name which grows freely in India and elsewhere. It is a deep, powerful blue, not so bright as Prussian blue. It works well in both water and oil, and is a good glazing colour in marbling, etc. It, however, sustains injury from impure air, and is apt to prove fugitive when employed for tints with white lead. Only the best and purest samples should be selected.

Cobalt.—This is quite a modern pigment prepared from the metal of the same name, being, when pure, a compound oxide of cobalt and alumina. It was discovered by Thénard in 1802. It is very poisonous, but is a good bright colour and moderate in price. It resists light, but speedily tarnishes in impure air. The pale ultramarine or imitation cobalt made in the United States renders cobalt unnecessary to the American painter. It is sometimes termed "Thénard's blue," after its inventor.

Verditer.—This used to be a good deal employed in distemper work, but it is not popular now. When used in oil it must be mixed with white lead.

We now pass on to the secondaries, of which the first is

Orange, a bright and warm colour. The perfect orange hue is considered by chromatists to be compounded of five units of perfect red to three of perfect yellow. A perfect orange thus constituted is held to neutralise an equal quantity of perfect blue. To pass on to the commercial colours.

Orange Chrome.—This is a fine orange pigment, and exceptionally durable for a pigment of leaden extraction. When good it is a very bright warm pigment, as pronounced as vermilion.

Orange Ochre.—This is a burnt ochre, a moderately bright yellow, works well in either oil or water, and is a durable pigment.

Orange Lead.—This is also known as orange mineral, and resembles red lead in its general properties.

Green, which is the second of the secondary colours, and is

the tint which is found the most extensively in the works of nature, being the characteristic hue of almost all terrine vegetation and of a great deal of that of a marine character. In house painting, greens are very frequently compounded from blues and yellows. The following are the principal useful green pigments:—

Brunswick Green.—This is one of the large class of pigments known as "copper greens." All the colours are bright, fairly permanent, somewhat coarse in tone, but well adapted for house-painting purposes. They have considerable body, and dry well in oil. In white lead, however, they are all to a certain extent deleterious. They are not employed to any extent in the United States.

Verdigris.—This is an acetate of copper, of a bright green, inclining to blue. With oil verdigris is durable as regards light; but moist or impure air causes it to exfoliate. This tendency consequently renders it an unsafe pigment, either used alone or compounded.

Emerald Green.—This is an arsenico-copper green. It is of a brilliant colour, but difficult to manage in oil, and dries badly. It is also difficult to incorporate with the oil for grinding, and it is therefore better to purchase it ready ground in oil, in which state it can be procured at most warehouses.

Chrome Green and Mineral Green. — These are two useful pigments for general use, but have no special merits. A so-called chrome green, compounded of Russian blue and chrome yellow, is the green principally employed in America.

Brown, which is a rather indefinite term, as "browns" vary from a light drab to a colour deep almost to a black. In chromatics it is considered that equal parts of either the three primaries, the three secondaries, or the three tertiaries will produce a brown. This is theory. In practice there are so many excellent brown pigments that there is no necessity to

produce the colour by combination. We now pass on to the distinctive colours.

Raw Umber.—This is an ochreous earth. It is transparent, and requires to be mixed with white lead to become opaque in oil. It is a good glazing and distempering colour, and is useful in graining.

Burnt Umber.—This is the same earth calcined, when it becomes of a much warmer tone, although its qualities remain the same as in its raw state.

Burnt Sienna.—This is the same earth (*terra di Sienna*) of which I spoke under the title of raw sienna amongst the yellow pigments. After calcination it is a rich warm russet colour, which works and dries well, and is very useful in graining. This is the colour generally employed for the shading of gold letters, etc.

Vandyke Brown.—This brown gets its title from the fact that it was much used and esteemed by the great painter Vandyck. This pigment is a beautiful rich colour, which can be used either in water or oil. Being beautifully transparent, it is especially employed in oil as a glazing colour, particularly in graining, as will be seen when I come to treat of that department of my subject. To the imitators of rare woods Vandyke brown is invaluable.

Spanish Brown.—This is an ochreous earth, not very much used in England, and possessing no special qualifications. In the United States it is very much employed as a cheap red-brown paint.

We come now, in due course, to

Purple, which is a secondary colour not very much used in house painting, not being what may be termed a pronounced colour. Some blues, indigo amongst them, are almost purple. This colour is generally produced by mixing blue with a crimson (not scarlet) red.

Having dealt with the various pigments, I shall now proceed

to touch lightly upon the various media and apparatus employed. Thus the first matter to treat will be that of

Grinding.—The principal ingredients, besides the pigment, employed by the house painter and decorator are white lead and linseed oil. If colours are required it is necessary to add to these some one or more of the various pigments already enumerated until the proper tint and shade are obtained. The pigments thus employed are generally termed "stainers" in England, as they *stain* the white lead foundation to the required hue, and as "tinters" in the United States, though neither is exactly correct, and "colourers" would perhaps be the best term. Drying materials, known as "driers," are also added to hasten as far as may be the process of desiccation. White lead (or sometimes zinc white) may, however, be considered the basis of all ordinary paints, and generally forms at least nine-tenths of their composition.

The linseed oil is sometimes used boiled and sometimes raw. The former dries much more quickly than the latter; but the inspissation caused by the ebullition so thickens the oil that it is only adapted for outdoor work. Spirits of turpentine (generally technically known as "turps") is added to paint as a drier. Litharge and sugar of lead ground in oil into a thick paste are employed for the same purpose. Preparations of this description ready for use are sold at most oil and colour warehouses and at the drysalters' under the name of patent driers. Japanners' gold size is also frequently used as a drier.

Merimée observes: "Some recommend sulphate of zinc, calcined plaster of Paris, and black oxide of manganese, but litharge undoubtedly stands before all. Oxide of lead having the greatest power over the oils, to recommend other substances would be superfluous." Nevertheless the manganese salts are siccatives of great merit, borate of manganese being the principal salt.

The various pigments enumerated in this and the two pre-

ceding chapters are employed as "stainers" according to the colour required.

The white lead and oil are first carefully ground up together until brought to a homogeneous mass. The requisite pigment or pigments needed as a stainer or stainers are then added and again ground until perfect amalgamation is secured. The colour should be ground in small quantities at a time, and frequently turned over and spread with the palette knife, bearing in mind the observation made when treating of pigments, that some of these are impatient of steel or iron, and must be touched with an ivory, bone, or boxwood spatula only, or they will become discoloured. It may be noted that different pigments require to be ground to a different degree of fineness universal both with the artist and the decorator; but this procedure has long since been superseded by the paint mill, with which the chemist or paint manufacturer grinds paint on an extensive scale. Many varieties of paint mill are in use; but into this branch of my subject it is unnecessary to enter further.

Appended are a couple of recipes for driers:—

1. Best litharge ground to a paste with drying oil. For dark colours.

2. From sugar of lead and drying oil. This is suitable for pale colours.

CHAPTER VI

PIGMENTS AND MEDIA

IN this, my last division or chapter treating of pigments and media, I shall devote my attention firstly to

Aniline Colours.—Quite within the last few years scientific chemists have discovered that some very beautiful colours can be obtained, by a peculiar process, from the refuse of gasworks. These colours are principally shades of crimson and purple (known by such fancy names as "mauve," "magenta," etc.) and also shades of golden yellow. As the colours are obtained in the form of liquids, not of pigments, they have hitherto been of no use to the painter and decorator, although there are people who believe that they will be eventually utilised.

Ancient Media.—Liquid dyes, such as the juices of plants, are of no use for house painting, nor, indeed, for any painting, properly so called. Probably in the very earliest applications of pigments in a powdered condition as decorative agents, the colour was mixed with water. But it would soon be discovered that some better medium was required. When the coating so prepared became dry, it would be found that it would blow off, rub off, and in particular that the first heavy shower of rain would almost entirely remove it. Hence, quite early in the history of the arts, man would find that in order to use the earthy pigments in painting or decoration he required some more substantial medium than water. The earliest wall colouring by pigments with which we have any acquaintance

is that of the ancient Egyptians. The olden people of the Nile Valley covered the walls of their temples and palaces with historical and general pictures, all executed in bright pigments, generally of the primary colours. With what medium these pigments were mixed is not known, but it is known that the paintings have endured in their pristine brilliance for periods varying from two thousand to five thousand years. Some of these pigments have been analysed, but the nature of the media employed with them has not been discovered. Of ancient Greek artistic painting somewhat is known, partly from the treatises which have come down to our own time, and partly from existing specimens (of which there are very few extant). Their method of painting was termed "encaustic," and the colours were mixed with wax and applied in a hot condition. Of course, with such a medium as wax this style of painting was very durable. The paintings of the ancient Romans were principally executed on walls, and were either in "fresco" or "tempera" (or distemper). Some specimens of these have come down to us, especially those preserved in the houses of the buried cities of the Campagna—Herculaneum and Pompeii. The yolk and white of egg, parchment size, the milky juice of the fig tree, vinegar, wine, and honey, all appear to have been used as media. The artists of the Middle Ages also painted in fresco and on wooden panels in tempera. They appear to have employed several of the same media as the Romans. The date of the first use of oil as a medium is a point somewhat controverted. It is generally asserted that the brothers Van Eyck, in the fourteenth century, executed the first oil painting. Others have contended for an earlier inventor. It is probable enough that there had been earlier tentative efforts, but certainly the oldest extant picture in oils is by one of the Van Eycks. Doubtless, as soon as the artists had proved what an excellent medium oil really was, the house painters rapidly adopted it.

Oils.—Oil can be drawn from each of the three great kingdoms of nature—thus there are mineral, vegetable, and animal oils. Of animal oils, neat's foot, train, and cod liver are the best known. The first was probably known to the ancients; the second, derived from the whale, can only have been used since the whale fishery has been in existence; the third is simply used as a medicine. None of the animal oils are used by the house painter. The vegetable kingdom is, however, the great source of the oils employed economically. Some of these, such as the oil expressed from the fruit of the olive (*Olea Europœa*), were doubtless known to the ancient world. Vegetable oils are roughly divided into "fixed" and "volatile" oils, and these are distinguished from each other by the transitoriness or permanence of the stain which they make on paper. The fixed oils only are used for house painting, and only such of these as are also drying oils, which are known by the clear stain upon paper already alluded to becoming hard and ceasing to be greasy after the lapse of a little time. The following is a list of the seven best drying oils, with the sources whence they are derived, and their solidifying points by the Centigrade thermometer:—*Linseed oil*, seeds of flax, 20 deg.; *nut oil*, walnut, 18 deg.; *poppy oil*, seeds of poppy, 18 deg.; *hemp oil*, seeds of hemp, 28 deg.; *fir seed oil*, seeds of pine, 30 deg.; *sunflower oil*, seeds of sunflower, 16 deg.; *gold of pleasure oil*, seeds of *Canchira sativa*, 19 deg. Of these oils, linseed, hemp, and walnut have about the same degree of fluidity at the same temperature, 19 deg. C., which is only one-tenth of pure water, while poppy oil is the least fluid of all. Linseed oil is the medium generally employed by the house painter and decorator. I may here, however, introduce the words of a well-known authority, anent a new departure in the utilisation of poppy oil: "Messrs. Harrison Brothers deserve the thanks of all persons who are extensive users of paints, for their new

lead paint, mixed with poppy oil, will undoubtedly be found to last considerably longer without becoming abraded than those mixed with linseed oil." When boiled, the drying properties of linseed oil are considerably increased. Linseed oil, like wine, improves by keeping. As a rule, it is not much adulterated; in fact, it does not pay manufacturers to adulterate it. Nevertheless, samples of linseed oil may be sometimes encountered in which the adulterator has dipped his sophisticating fingers pretty deeply. The oils mixed with linseed oil are usually cottonseed oil, resin, fish, and coal oils. We yet lack a simple and reliable chemical test, of easy application, for the purity of linseed oil. The best plan is to subject the suspected specimen and one of undoubted purity to certain tests simultaneously, and observe if their behaviour is identical under the ordeal. If so, the specimen under trial may be pronounced genuine. The other vegetable oils are, as we have said, occasionally employed in art, but, as a rule, the house painter and decorator sticks to linseed. All the fixed drying oils mingle readily with benzole, spirits of turpentine and mineral turpentine. The "essential" oils derived from the vegetable kingdom are but few in number, but one of them, at least, is very useful to the house painter. Essential oils are all volatile when freshly prepared; indeed, their mode of preparation, which is distillation, involves this. The most important of the essential oils is that of turpentine, obtained from coniferous trees. The resinous productions of the pine trees are six in number — turpentine, scrapings, spirits of turpentine, resin, tar, and pitch. Turpentine is the resinous sap of the pine, and is obtained by making incisions in the trunk. It flows, of course, most freely in the summer-time. The tree is reckoned to yield sufficient to make the operation profitable for six years. The oil of turpentine is distilled in copper stills, the yield from the droppings being greatest the first year that a tree is tapped, or "boxed," and decreasing year

by year. The residuum left in the still is resin. Tar is made from deadwood of the pine, burned in a kiln. This is the kind of tar known as "Stockholm" or "Norwegian." Gas tar is a residual product of the gas manufacturer. The oils of turpentine of commerce may be thus classified, with their sources: English turpentine, *Pinus Australis*, etc.; American turpentine oil, various *Coniferæ*; French oil, *Pinus maritima*; German oil, *Pinus sylvestris*, etc.; Venetian oil, *Larix Europeæ*; and pine cone oil, *Pinus pumilio* and *Abies Pectinata*. Oil of lavender is a foreign oil, derived from *Lavandula spica*, or spike lavender, and although inferior in odour to that from *L. vera*, our English lavender, is better adapted for painting. It is a far more powerful solvent for resins and similar substances than oil of turpentine. The oils derived from the mineral kingdom are of quite recent introduction. They have great economic value, but up to the present time have not been largely used in painting. These hydrocarbons are variously termed naphtha, petroleum, paraffin, etc. "Mineral turpentine" is the commercial name given to the "spirit" or most volatile portion of native rock oils, as of the artificial paraffins prepared from coals and shales by distillation at a low temperature. The best paraffin has been used as a medium in mural decoration. Naphtha is a product of the distillation of coal gas. Benzole is an excellent solvent of resins and similar materials.

Resins.—Many of the resins are useful to the decorator. *Copal* is a very valuable resin, and forms the chief ingredient of the useful copal varnish. *Canada balsam*, procured from *Adies balsamea*, is a kind of resinous turpentine, which, dissolved in oil of turpentine, forms a clear and colourless varnish, which dries in the course of a day or two. *Dammar* is an East India gum or resin, which furnishes a varnish little inferior to copal. *Mastic* is obtained from the *Pistacia lentiscus*, and comes from Chios, in the Greek Archipelago. It

is soluble both in alcohol and in oil of turpentine, and forms a rapidly drying varnish, which is, however, subject to the drawback of darkening with age. *Shellac*, which we derive from the East, is also much used for making varnish. It dissolves in alcohol, fusel oil, and in one and a half parts of acetone. *Sandarach*, the produce of the *Thuja articulata* of Barbary, was formerly much employed as a vehicle in tempera painting, but it is not at the present day considered a satisfactory resin. *Gum animé*, a resin from the West Indies and South America, is a good deal used in France. It is not very hard or durable. *Gum arabic* and *gum tragacanth*, or *dragon*, are occasionally employed for special work. There are several Chinese and Japanese resins, or lacs, used in the composition of lacquers, to which it is not necessary here to advert.

Several liquids are employed for internal applications of colour in distemper decoration. Amongst these is size, which is ordinary glue melted and thinned.

Quite within the last few years an innovation in the painting trade has been caused by several of the large paint manufacturers, both in England and America, having taken to producing ready-mixed paints. In England this branch does not do much more than put up variously coloured paints, ready for using, in 1 lb. tins or somewhat larger sizes, these being generally affected by amateurs or those who desire to do a little home painting. But in the United States they manufacture these ready-mixed paints in bulk for the trade, and the American house painter considers these paints a great boon.

CHAPTER VII

PREPARATION OF WORK, ETC.

SURFACES.—Speaking generally, the descriptions of surfaces to which the house painter is called upon to apply colour are taken in the order of their frequency—wood, plaster, brick, stone, and iron; and these are used both externally and internally.

Preparation of Woodwork.—In our variable English climate it is customary to paint all woodwork employed in architecture, both external and internal. Most of it is painted *in situ*, but such things as panel frames and sash doors are painted or partially painted in the workshop. The first consideration with woodwork, as with all other substances on which the painter employs his brush, is that the operator should have a perfectly plane and smooth surface to work upon. The wood as it is left by the planing machine or the joiner's smoothing plane is, as a rule, tolerably level, but it is yet subject very often to two kinds of irregularity. The first arises from "knots" and "shakes," the second from nail heads. Knots seldom cause much irregularity, although they are troublesome in another way, presently to be adverted to. But "shakes" are often the cause of inequalities of surface. A "shake," in the technical language of the carpenter and joiner, is an unsound place in the wood, generally arising from some of the angular rings having been cut through at an angle in the process of conversion. When this is

the case, the subsequent handling of the plank or board, or its exposure to heat, will cause the annular rings to lose their cohesion and spring asunder. For example, let Fig. 19 represent the section of the trunk of an exogenous tree, showing the annular layers of wood. If, in conversion, this trunk were cut in the direction of the line A B, the surface left would resemble Fig. 20, and in such a case there would probably be a "shake" where the lines are, and after the board was planed up, in all probability the point A would

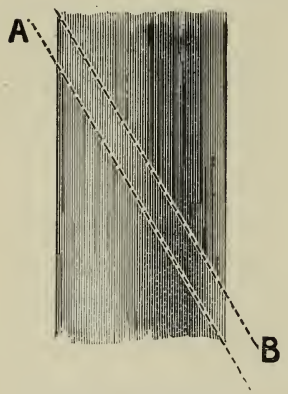


FIG. 19.—Diagonal Cut.

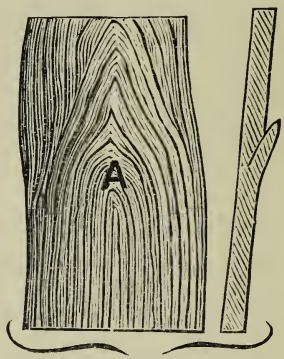


FIG. 20.—"Shake."

detach itself and spring up above the general surface. As a rule, the crack of a "shake" can be easily stopped up with a little putty; but in such a case as this the point A will need to be used. For this it will not be necessary to call in the joiner, but a small hole can be made at A with a fine spring bit, and a little brad inserted and driven home, the crack being afterwards puttied up, or it can be treated with "hard stopping," which is a mixture of putty and white lead. In puttying up cracks some care should be exercised. Frequently the painter simply plasters some putty or "hard stopping"

into the crack with the stopping knife, and smooths it off flush. In such cases it is almost certain that the stopping will shrink on drying, and leave the crack quite perceptible still. The putty should be well forced into the crack with the edge or point of the knife, and, instead of being cleaned off level, should be left a little elevated above the general surface of the panel, to which it will shrink as it dries. Superficial depressions of some extent, termed in England "delves" or "dents," are sometimes found in new work. It is very difficult to stop these permanently, because, being very shallow, the thin coat, which it is only possible to apply to them, is very apt to become detached and peel off. The best way to deal with these depressions is to stab the point of the stopping knife freely a short distance into the wood all over their surface, especially towards the edges. Then, if the stopping be carefully applied, it will enter the holes thus made, and, so to speak, root itself. In panel doors and other good joinery, put together with proper joints, there are, of course, no nails to be considered. But sometimes, in coarser woodwork secured by nails, the painter may find the heads not level, as at A in Fig. 21; in that case he should

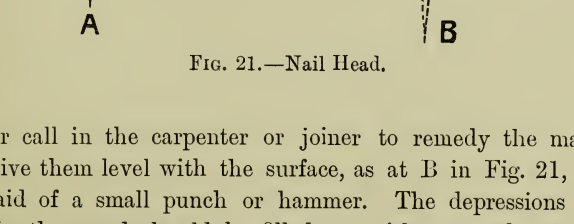


FIG. 21.—Nail Head.

either call in the carpenter or joiner to remedy the matter, or drive them level with the surface, as at B in Fig. 21, with the aid of a small punch or hammer. The depressions thus left in the wood should be filled up with putty, by the aid of the "stopping knife" shown at Fig. 22. Some English

painters prefer a "stopping knife" with a bent blade, which is termed a "trowel" stopping knife, and is shown at Fig. 23, which is certainly also very useful in removing spots of glue, whitewash, etc., from new work, as it goes under these, and

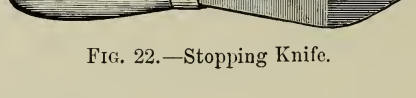


FIG. 22.—Stopping Knife.

lifts them off without scraping up the fibre of the wood. In olden days, in England, the woodwork of the various buildings was oak generally, sometimes perhaps of Spanish chestnut. At the present time we are almost wholly dependent upon foreign supply, principally from Canada and the North of Europe, and that nearly exclusively for the timber of some of the *coniferæ*, which we know under the terms of "deal," "pine," and "spruce." All these trees have sap which is highly resinous, and this produces a defect in the

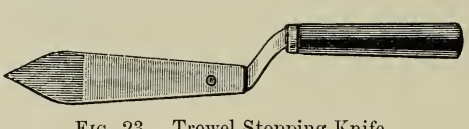


FIG. 23.—Trowel Stopping Knife.

timber, which it is needful that the painter should guard against. Wherever the limb or arm of a tree joins the trunk there is a "knot," which often runs a long way into the bole. In the timber of the *coniferæ* these knots exude a resinous secretion, like turpentine, for a long time after the tree has been felled. This occurs more plentifully when the wood is exposed to the sun's rays or under other heat. In the shrinkage consequent upon seasoning or heating, moreover, these knots are apt to shrink, become loose, and eventually to drop out. If woodwork which will be exposed to the

sun have resinous knots in it, and be painted without precaution, the sunbeams will cause the turpentine or resin to exfoliate, exude, or boil up. It may then raise the coating of paint, crack it, and exude or work out, to the great detriment and appearance of the work. Hence knots should be dealt with before painting accordingly as the circumstances may dictate. Ordinarily they are "killed" by being covered with a daub of red lead and oil. Some workmen prefer what is termed "knotting," of which there are several kinds which rejoice in the designation of "patent." If the knot be very large it is well to get the joiner to cut it away with the chisel for a depth of about a quarter of an inch, and then to fix a piece of sound wood into the depression. If the knot is loose, and the painter can get at both sides of the work, as, for instance, in the stiles or rails of a panel door, it is best to push the knot out, and let the joiner insert a bit of sound wood in the hole left. Ordinary "knotting" is generally made of red lead in powder mixed with glue or size, and is brushed over the "knots" with a "tool" or small brush. The following recipe for "knotting" has been tested:—Japanners' gold paint, $\frac{1}{4}$ pint; red lead (in powder), one teaspoonful; orange shellac, seven ounces,—dissolved in one pint of vegetable naphtha. To be kept in a warm place until the ingredients thoroughly dissolve, and shaken from time to time. Some painters go over all knots twice—the first time with a "knotting" of red lead in strong size. The second preparation they use is composed of both white and red lead in powder ground in oil. Sometimes, in extreme cases, a bit of silver leaf is placed over the knots. Besides the foregoing precautions, it is necessary to go over the work and remove any drops of glue, bits of whitening, or other accretions which may have fallen on it or stuck to it before it reaches the painter's hands. These are to be removed with the stopping knife. The whole surface of the work

should be cleaned and kept clean during the operations by dusting with the "dusting brush," which is a brush with rather long hair, and shown at Fig. 24. Not infrequently the depressed portions of mouldings will be found not to be struck quite clean, but to be encumbered with fibres or filaments of wood. This may happen even when the mouldings are run by the moulding machine, but still more often when they are struck by the usual "hollows," "rounds," and other moulding planes of the joiner. This occurs from the "irons" of these planes, which are rather difficult to sharpen, being kept dull. When this is the case the fibres may generally be removed by drawing the point of the stopping

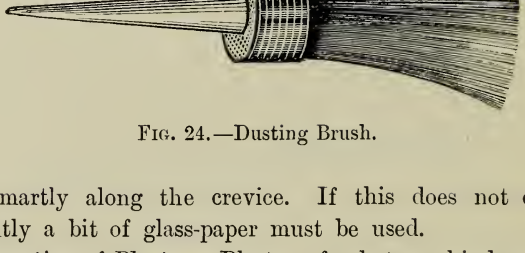


FIG. 24.—Dusting Brush.

knife smartly along the crevice. If this does not clear it sufficiently a bit of glass-paper must be used.

Preparation of Plaster.—Plaster of whatever kind generally presents a sufficiently level surface to at once commence operations upon, but great care must always be taken that the plaster should be quite dry. Unless this is the case the moisture will be sure subsequently to rise to the surface, and affect the coat of paint injuriously.

Preparing Brickwork, Stone, and Stucco.—The kind of surface presented by brickwork depends mainly upon its age, but also, to some degree, upon the quality of the bricks and the skill of the bricklayer. Both brickwork and stucco (and also Portland cement) must on no account be painted until

the entire surface is thoroughly dry. Unless this be the case, with regard to stucco especially, it is obvious that the oleaginous coating of paint will prevent the evaporation of the humidity of the stucco, and the acrid lime water thus retained will force off the top layer of the plaster in patches, carrying the paint with it. If either brickwork, stucco, or plaster be old, it may be taken for granted that it is sufficiently dry. But, on the other hand, old brickwork is generally very unlevel. Of course, if the mortar has fallen out of the joints, a bricklayer must re-point the brickwork before the painter begins operations. Where this is the case, care must be taken, as stated above, to let the mortar get properly set and dry.

Iron.—As a rule, generally clean non-oxidised wrought or cast iron requires no preparation.

CHAPTER VIII

APPLICATION OF ORDINARY COLOUR

PRIMING.—When the surface of the work is brought to a satisfactory condition, the first application of colour is known as "priming." The paint used for this first coat should, so far as possible, be possessed of such qualities as will, to as great an extent as may be, neutralise the absorbent nature of the wood, plaster, brick, stucco, or other substance to be painted. This primary colour usually consists of a mixture of white and red lead, with some driers, mixed with oil, and giving that whitey-brown tint generally known as stone colour. Here, at the outset, I may state that in mixing or thinning down paints for use, boiled oil is generally—principally or wholly—used for outdoor work, when a portion of turpentine and pale linseed oil is often added. For indoor work, linseed oil, turpentine, and driers are employed. The smaller the proportion of oil used for the purpose, the less will be the gloss, but the greater the hardness of the coating when dry. The best driers are, as mentioned previously, ground litharge and ground sugar of lead; the first for dark and middle tints, and the second for light ones. The priming colours then being mixed—with boiled oil for outside work, and with linseed oil for inside work—with a small portion of turpentine (say, one part to three parts of oil) in both cases, the painter begins operations.

The brushes requisite for laying on the colours are of various

descriptions and sizes. The largest are known as 1 lb. brushes. They are also sometimes termed 40 (or oval), 60, and 80; the last being the biggest. Though these brushes are called "oval," the term is an erroneous one. A section cut through their hairs at right angles to their length would give a more or less perfect ellipse, that geometric form differing essentially from an oval. The ordinary round brush, string bound, is shown at Fig. 25, and the oval one, which I, for preference,

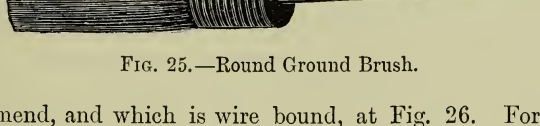


FIG. 25.—Round Ground Brush.

recommend, and which is wire bound, at Fig. 26. For small work, as, for example, window sashes, the tool or "sash tool," shown at Fig. 27, is employed.

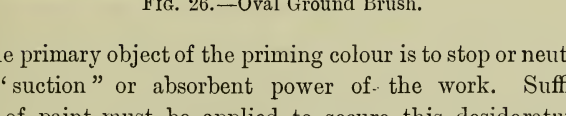


FIG. 26.—Oval Ground Brush.

The primary object of the priming colour is to stop or neutralise the "suction" or absorbent power of the work. Sufficient coats of paint must be applied to secure this desideratum, or

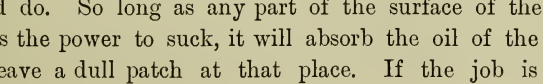


FIG. 27.—Sash Tool.

the last and top coat will not look glossy and smooth as it should do. So long as any part of the surface of the work retains the power to suck, it will absorb the oil of the paint, and leave a dull patch at that place. If the job is to be

finished in a dark colour, it is not unusual to prime with slate or lead colour, made by mixing vegetable black and white lead in about equal quantities.

I detailed, in my last chapter, the operation known as "stopping" as performed on new work. This was done in order to keep my subject in proper divisions; but, as a matter of fact, most painters prefer to do it after the work is primed. When the priming is thoroughly dry, its surface should be gently rubbed over with a bit of fine glass-paper, and all the dust carefully removed by means of the dusting brush. The second coat is usually the same as the priming colour, with the same proportions of oil and turps. New woodwork and plaster are generally considered to require at least four coats of paint. If the absorbent power in either case is unusually strong, they may even require a fifth coat. When the second coat is quite set, it should be glass-papered and dusted as before.

Not much needs to be said with regard to the simple laying on of the colour. The apprentice will learn the ordinary procedure the very first day that he takes the brush in hand, simply by watching the motion of an older hand. In ordinary flat work, the brush should be worked backwards and forwards in various directions, so as to thoroughly equalise the coating all over the work. The surface thus covered must then be "laid off" by drawing the brush firmly but lightly from the top, downwards for a certain distance, and then from the bottom upwards, to meet the former strokes, taking care that at the point of junction there is no thickness of paint or visible appearance of meeting. The beginner must guard himself against the fallacious idea that by laying on his paint thickly he can spare himself the labour of laying on one or two coats. But this will not do. Good work only can be secured by applying the paint thinly and carefully, and permitting each coat to become perfectly dry before the next is applied. Where there are depressions or angles in the work, as in mouldings,

beads, etc., the paint will require to be at first forced into the lower portions by "jobbing" it in with a stiff-haired brush, and afterwards smoothing it longitudinally. In the third painting it is well to employ some stainer to correspond with the finishing colour. If this is to be dark, the slate or lead colour already alluded to will be suitable; and in this coat the oil and turps may be in equal proportions. If the finishing colour is light, the paint for the third coat may be of white lead slightly stained with the pigment to be employed in the last painting. When this last coat is dry, the entire surface ought to present an equal degree of glossiness. If it does not, an extra coat will be needed before the finishing.

Some operators make it a rule to apply a couple of coats of the finishing. If the pigment used as a stainer be not a very expensive one, there is no doubt that this plan produces excellent work.

Defects.—There are certain blemishes of a painted surface to which it may be as well to allude, in order that the young workman may avoid them. First, "streakiness," or undue prominence of the marks of the brush. Secondly, "crying," which is where the paint shrivels up and wrinkles or runs down in streaks. Both defects are caused by the paint being applied too thickly. "Cissing" is where the paint does not properly adhere to the preceding coat, but runs off or assumes a honeycombed appearance. This may be generally prevented by the painter damping over the surface of the work with a bit of moist wash-leather (chamois), and wiping well dry before he commences operations. "Puddles" or "fat edges" on the salient parts of mouldings, edges of stiles, etc., are caused by either too much paint or careless manipulation of the brush or tool.

Preparing Old Woodwork.—Old work is that which has been painted before, but to which a new coating has become necessary. The preparatory procedure depends upon the

condition in which the surface is. Where the coat of old paint is still intact and uninjured, it may be well washed with strong soap and water, and then rubbed over with pumice-stone, applied with plenty of water. It should then be left to get thoroughly dry, and be well brushed over with the dusting brush before painting.

If the surface be smoky or greasy, as is often the case in passages, kitchens, chimney-pieces, wainscotting, etc., the places so soiled should be well washed over with lime water or weak size, the former being, however, by far the better. If the old paint is blistered, the blisters should be carefully removed with a knife or scraper, and the places painted over first. All places where the old paint has cracked or fallen off should be similarly treated. When the old paint is very thick, from the woodwork having received many successive coatings, it is best to remove it entirely, which is effected by burning it off. In the old days this was a tedious and troublesome process, being effected either with a hot iron, or a kind of vertical hand brazier filled with burning coals; but modern appliances for the purpose are neater, more handy, and far more speedy in operation.

Of these apparatus, one form is shown at Fig. 28, which is known as the French Patent Self-acting Blower. This clever little contrivance is a species of spirit lamp furnished with a jet which projects a flat flame of great breadth, so that it operates very rapidly upon the paint. The heat quickly softens the old hard paint, which may then be scraped off with a "chisel stopping knife," as shown at Fig. 29. Care must be exercised that the wood itself is not scorched or burnt. The blower is manipulated as follows:—Half fill the boiler with methylated spirit, and fill the lamp with the same, using a piece of common lamp-cotton for the wick; in about half a minute or a minute from the time of lighting, the blast will be emitted, and may be directed to any required point. Keep the wick well in front

of the jet to prevent the blast from jumping. By pulling up the wick, a stronger blast may be obtained. To extinguish it, blow gently on the flame of the lamp from beneath. Another similar apparatus is the Wellington Automatic Torch. This burns benzoline, is quite safe, and throws an efficient jet. It is illustrated at Fig. 30. There are a variety of other blowers

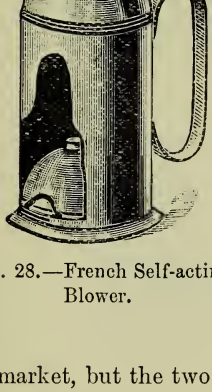


FIG. 28.—French Self-acting Blower.

FIG. 29.—Chisel Stopping Knife.

in the market, but the two samples cited are amongst the very best.

Flatting.—In the preceding remarks the work is supposed to be done in oil finish, and the surface therefore should be uniformly glossy. But at the present day, many, both of customers and of painters, prefer that the last coat applied should be what is termed "flatted"—*i.e.* that it should not be glossy. For this the fourth coat should be mixed with equal parts of linseed oil and turps, and should be as "round"—that

is to say, thick—as it can be conveniently applied. The previous coats should have been laid on very smoothly, and well glass-papered, and the same remark applies also to this fourth coat.

The finishing coat or "flatting" should be composed of pure white lead, coloured with the desired stainer, and diluted with turps only; this will dry rather darker than it appears in the can. Some operators put patent driers to it, and some japanners' gold size, but the turps is itself such a siccative that neither is needed.

In applying this paint, the workman needs to be equally

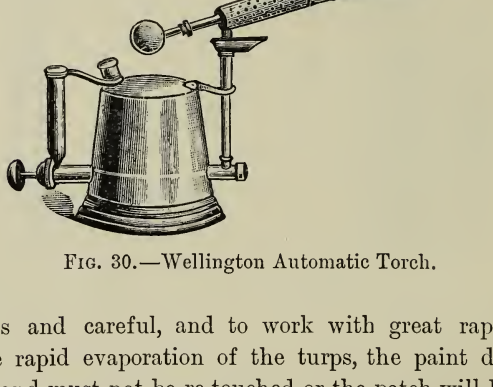


FIG. 30.—Wellington Automatic Torch.

dexterous and careful, and to work with great rapidity, as, from the rapid evaporation of the turps, the paint dries very quickly, and must not be re-touched or the patch will be glossy. When any large surface, such as a wall, has to be thus covered, two painters must be placed on the job, one standing on the ground and the other on a plank or platform above him.

The following plan is given by a very experienced painter as a thoroughly reliable way of finishing in flatting:—"Walls and woodwork that are to be flatted should first be got up in oil finish. The day after the last coat of oil colour is applied (by oil colour we mean a paint thinned with two-thirds oil and

one-third turps), apply the flatting coat. This flatting should be made as follows :—Break up the lead and stainers in turps the day before the flatting is used. Strain it, and set it on one side out of the dust till next morning. Then skim off any oil which may be floating on the surface, stir up, and if of the right consistency it is ready for use. On walls or ceilings, flatting should always be evenly stippled to avoid 'flashing'

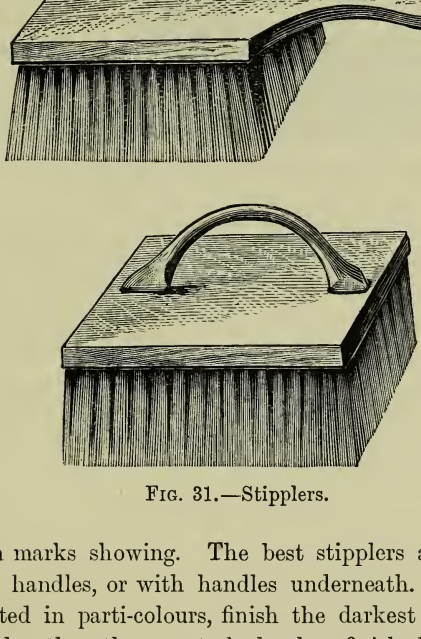


FIG. 31.—Stipplers.

and brush marks showing. The best stipplers are those with reversible handles, or with handles underneath. If a door is to be flatted in parti-colours, finish the darkest colours in oil rather darker than they are to look when finished, and then go over the whole door with flatting same colour as the lightest tint on door." This gives a good finish.

Of late years certain flat-backed brushes, with stuff hairs,

called "stipplers," shown at Fig. 31, have come into use for flatting. The surface of these is gently dabbed against the paint while still wet, and so produces an almost microscopically minute granulation of the surface. The stippler with the reversible handle, mentioned above, is shown at Fig. 32. This stippler is one, the plan of which, when once known, will recommend itself to every painter. Reversible stipplers, on

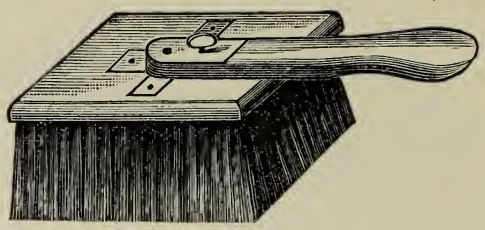


FIG. 32.—Stippler, with Reversible Handle.

this principle, have now been in use for some years past by a celebrated decorator, who claims to be the originator of the design. The handle will be found superior to all others, it being firmer than any of the reversible stippler handles now in use. The advantages of this tool are that by loosening the thumb-screw the handle can be turned in any position, and by so doing the brush can be evenly worn over its whole surface, while the reversible stippler will last much longer than those having fixed handles.

CHAPTER IX

GRAINING

AT what period the house painter in England first began to imitate rare woods and marbles is not exactly known; but it certainly was at no very early period. We can only find, on what appears to be good authority, that mahogany was imitated in England by graining in 1796, and probably graining and marbling were not in general use until the present century. It has always been considered — and with good reason—that these two branches, together with lettering, form the most difficult division of the house painter's art. The simple art of laying on a coat or two of any self-colour smoothly and evenly is nothing, and can be acquired by the apprentice in a very brief space; but to become a good grainer and marbler requires observation, thought, experience, and practice.

Tools.—The usual brushes are employed for laying on the ground, but certain other appliances are needed, especially in graining, which may be briefly described.

First come several "combs" for producing the striations found in some varieties of timber—notably oak. For this purpose ordinary bone combs of different sizes—A and B in Fig. 33—with the ends of the teeth ground flat, are useful, and doubtless these are all the aids the early grainers possessed. Very good work can be done with them, and some men recommend that several of the teeth should be broken out, as

at C in Fig. 33, to produce the irregularity generally found in nature. But the kind of comb generally employed in combing oaken graining at the present day is made of very thin steel, with the teeth regularly cut, as at D in Fig. 33. In the same figure (E) is shown a comb of stiff leather cut to teeth accurately by a machine. These are made in "coarse," "medium," and

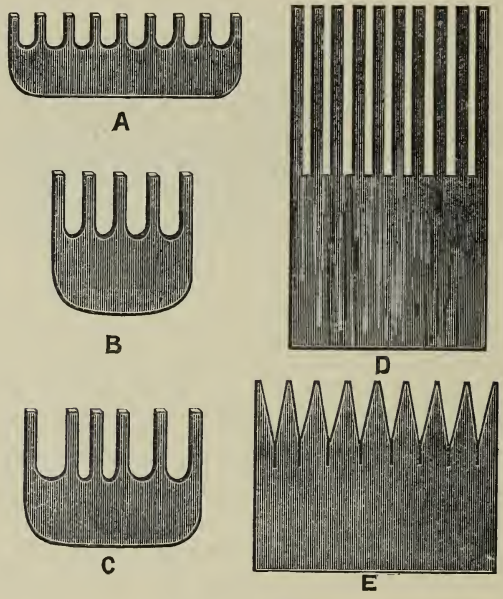


FIG. 33.—Combs.

"fine." This is a great favourite with some artisans, especially for distemper. Besides this, similar combs are made of vulcanised indiarubber, which work very well. These combs are mounted in tin sockets, and the teeth cut thus:—No. 1, fine, about twelve to the inch; No. 2, medium, about nine to the inch; No. 3, coarse, about five to the inch; No. 4,

graduated; and No. 5, irregular. These are also very good for graining in distemper.

Various special brushes known as "over-grainers" and "stripers" are also in use for graining. In these the hairs are either set in small bunches, or the grainer divides them into similar divisions by the aid of a comb.

A group of these is shown at Fig. 34, where A is one form of an over-grainer for oak, B is a hog's-hair "oak striper," C is a

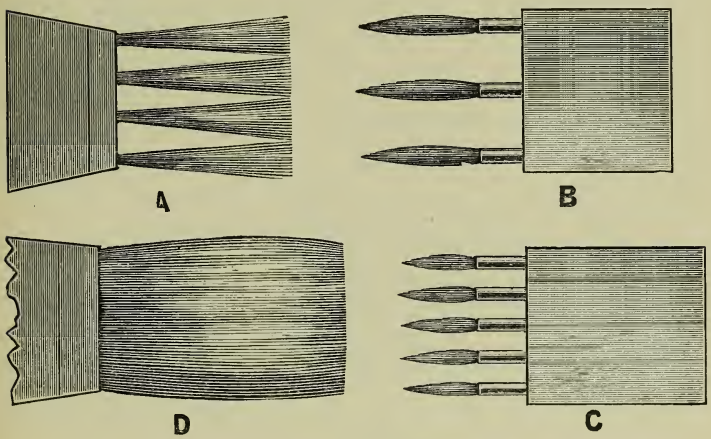


FIG. 34.—Over-grainers.

sable "over-grainer" for maple. In the two latter the hairs are fixed in small metallic tubes; D is a thin hog's-hair "over-grainer," useful for maple, but which can be employed for any over-graining. The painter divides the hair of this into separate points with a comb before using.

Besides the foregoing, some pieces of chamois leather, bits of sponge, and three or four pinion or pen feathers from a fowl-wing are needed.

The preceding list constitutes the ordinary paraphernalia of the grainer, but in recent years several mechanical appliances

have been introduced in order to produce grained surfaces quickly and cheaply. In England these are but few in number, but in the United States quite a quantity have been experimentalised with, due partly to the fact that good grainers are less frequently found in America than in Europe. One of the mechanical adjuncts in use among English workmen is known as the "graining roller," shown at Fig. 35. It consists of a small iron roller, mounted, as shown, in a light carriage, to which a wooden handle is attached. The roller revolves freely upon its axis. The periphery, or rim, of the roller is covered with thick buff leather, such as soldiers' belts are made of, cemented to the wheel, with the flesh or rough side outwards. Upon the surface of this a portion of the grain of oak, or other timber, is cut with a very keen-edged knife, so as to leave those portions of the pattern in relief which would have been removed by the comb or chamois leather over the thumb-nail in ordinary graining. When this roller is passed over the last coat of colour applied, it is obvious that it, being very absorbent, will remove the colour and show the lighter coat beneath, so as to afford a very fair representation of the grain of the actual timber. But this machine can never yield the varied appearance of good hand-graining, and for this reason:—The rollers are about five inches in diameter (some are larger), which would give about one foot three inches for the circumference. It is therefore clear that in any case where an extensive superficies is operated on by this apparatus, precisely the same pattern will be repeated at about every foot run of the work, which is a material disadvantage, and militates much against the article ever being extensively employed. In some of these rollers the buff leather is only fastened by one end, instead of being cemented entirely round the rim of the roller, and shown at Fig. 36. This enables a rather more extensive surface to be executed in each pattern; but still repetition is inevitable. A subsidiary roller, such as is shown at Fig. 37, is

sometimes employed in oak graining. This is passed over the surface when the general graining is completed, in order to put in the "bates" or small black marks left by the transverse vessels of the timber. This apparatus consists of a number of sheet-iron wheels or circles, mounted side by side on a centre axis. The rims of these wheels are cut into irregular teeth or cogs, and, when charged with black paint and rolled over the

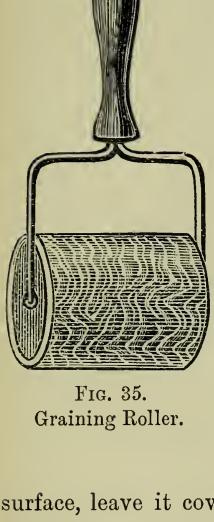


FIG. 35.
Graining Roller.

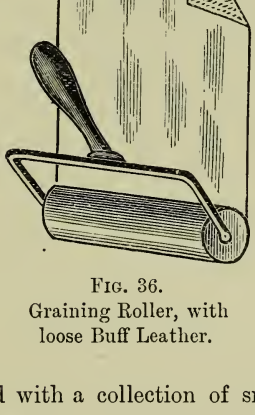


FIG. 36.
Graining Roller, with loose Buff Leather.

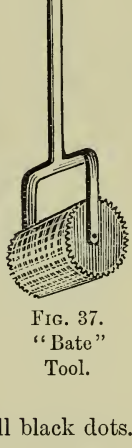


FIG. 37.
"Bate" Tool.

surface, leave it covered with a collection of small black dots. In the United States, where good hand-grainers are more or less at a premium, mechanical ingenuity has had larger scope and more urgent necessity to invent some facile substitute for the hand and head of the grainer. Most of these articles are patented. One is called the "rocking machine," from the motion of its action. It is a half-cylinder, having the curvilinear face coated with indiarubber, or printers' roller composition, or some other elastic material. On this coating the graining

pattern is produced in relief, and prints on the ground with the graining colour similarly to an ordinary indiarubber stamp. Another invention, the air-cylinder graining machine, consists of a cylinder, with an elastic surface, filled with air. On the surface the pattern is impressed. Of course, the periphery of this cylinder will readily accommodate itself to any inequalities in the surface to be grained. These machines are found useful in America for some purposes, but are of no real utility in house painting. "Transfer" rollers are also used. These are not widely dissimilar to our own "graining" rollers already described and figured. Perforated plates, of the nature of stencil plates, are also adopted. These are of some use to wipe out the "lights" in oak, the work having been previously combed; but any skilful grainer, who knows how readily a deft thumb-nail will accomplish the work, would scorn to require a mechanical adjunct of the kind. These plates are the invention of Mr. Callow, a practical decorator. A few moments' consideration will convince anyone that no mechanical power can imitate either the grain of timber or the venation of marble. To begin with, no two actual specimens of either material are ever exactly alike. The grainer and marbler, therefore, who aspires to execute either description of work, must be really an artist, and reproduce his work from actual specimens before him, or from recollections of such specimens, making an exact representation of the wood or marble itself precisely in the same manner as the pictorial artist reproduces a landscape. Indeed it would be just as reasonable to imagine that we could paint landscapes by a mechanical tool instead of by means of the fingers, eyes, and brains of the artist, as to think that a really good and varied bit of graining or marbling can be mechanically produced. Apprentices cannot do better than rely upon their own heads and hands to make them good and competent workmen, and to eschew all mechanical aids.

CHAPTER X

GRAINING

I SHALL now pass on, in continuation with my division dealing with graining, to a brief consideration of the *Nature of Timber*. The representation of the grain of timber and the venation and striations of marble by means of paint being a strictly imitative art, the operator therein should sedulously endeavour to make himself well acquainted with good originals — in other words, select the very best of their kinds, in order that he may sedulously copy them.

It will be well, for graining information, that the young painter should take a dip into some simple botanical treatise, where the nature and arrangement of the vessels of a tree trunk are described and illustrated. This cannot fail to help him to work more intelligently and with greater certainty. The next thing to observe and bear in mind is the appearance of the grains of all actual specimens of various timbers which he may come across. Opportunities of this description fall, more or less, in the way of all. For uncommon foreign woods the student will generally find a little collection, more or less useful, at the majority of museums; while a visit to Kew Gardens will afford him much valuable information, there being a very good assortment there.

The pigments employed in graining are the usual ones already enumerated. They are mixed in two different con-

ditions, and one kind is then known as a "ground" colour, and the other as a "graining" colour.

My space will only permit of a brief description of the most usual processes employed to imitate the grain of some of the timber in most ordinary use. I shall endeavour to be as explicit in my descriptions as practicable, but shall most certainly suffer from the absence of numerous coloured diagrams, which are of course very requisite in treating of such a subject as the present.

Oak.—Speaking generally, there may be said to be three manners of graining — namely, in distemper, in oil, and in spirits. In the old days much very good work was done in distemper, but that kind of work is now so nearly obsolete that I need only allude to it in the briefest manner.

The medium employed in distempering of all descriptions is good size. The best is *parchment size*, which is thus prepared:—Take a quantity of vellum, parchment, or forril cuttings, such as the vellum binders clip from the skins which they bind account-books in, and which can be procured at the varnish dealers or oilmen in towns. Cut these up into quite small pieces, put them into a pipkin that will stand fire, or an iron pot, fill the vessel with water, and let the shavings soak for twenty-four hours. When quite soaked boil them slowly for four or five hours, keeping the mixture from boiling over, and skimming off any scum that may rise to the top. When the size appears to be boiled enough, strain it, whilst hot, through a taminy or coarse cloth. When quite cold it should be a substantial jelly, which quivers at the slightest touch or motion. If it is not strong enough it should be boiled again. It must not, however, be so thick that the colour will not flow readily from the brush; on the other hand, it must not be so thin that its adhesive power is not sufficient to bind the colour mixed with it to the work. If it is required to be kept, three or four ounces

of alum, dissolved in boiling water, should be added to every pailful.

Size of various kinds can be purchased in towns of the oilman, which is sometimes very good, but more often variable. This is usually manufactured from glue, and of course its relative goodness or badness depends upon the quality of the glue used. To make size from glue, the glue should be first broken up into very small pieces. This can be most readily accomplished in the winter-time, when the glue becomes as brittle as glass, by wrapping up some pieces in a piece of stout brown paper, and striking them with a hammer on the paper until they are broken up into quite small fragments, but not to dust. In summer weather the glue becomes soft and adhesive, and can scarcely be broken, but bends instead. But if the operator has a pair of stout shears, he can easily *cut* it up into small squares, like jujubes. It should then be put into a vessel, covered with water, and permitted to soak for nine hours. Afterwards it is put into the inner pot of an ordinary glue pot with more water, the outer vessel being also filled with water, and then is allowed to simmer on the fire until the glue is quite melted. The contents of the inner pot may then be poured into an earthen vessel or zinc pail, and permitted to cool. When quite cold it should form a glutinous quivering mass, like the size sold at the oil stores. Sufficient of this dissolved in boiling water to make a medium of the required consistency is needed by the distemper painter, and in this, the pigment, in a state of the finest powder—impalpable, if possible—is carefully stirred until it is perfectly amalgamated with the size, and the consistency such that the colour will flow freely from the brush. A little alum and some soft soap should be added. The pigment can be obtained at the colour warehouses at the present day in a powder so fine as to obviate any grinding in the majority of instances.

Oak Graining in Distemper.—As distemper work is very often executed on plaster walls, a preparatory coat to the graining ground is frequently necessary. The "suction," or absorbing power, of such walls varies a good deal, but it is always necessary to stop it before finishing coats are laid on, if these are desired to look satisfactory. To prepare the first coat, mix sufficient good whiting with water until it is of the consistency of somewhat thin paste. Bring it to perfect smoothness, and add sufficient size to cause it to bind well. If no alum has been put to the size, add some now in the proportion of about a couple of ounces to the dozen pounds of whiting, adding also a couple of ounces of soft soap. For oak graining to follow, this preparatory white coat should have a little yellow pigment mixed with it. The ground colour may consist of a mixture of chrome yellow, white lead, and a little vermilion, mixed in such proportions as to produce a rich warm buff, a little darker than stone colour. This is mixed with size, and is laid on smoothly in the ordinary manner. It is advisable at first to test whether or no this ground colour has a sufficient proportion of size in it to make it bind properly. This can be done by brushing a little over some pieces of paper and drying them in the sunshine or at a fire. It can then be ascertained whether the colour adheres well to the paper. It must be borne in mind that although there must be *sufficient* size, there must not be too much, or the distemper will be likely to chip or fall off the walls, especially in heated rooms.

For the graining colour, take whiting, raw sienna, and Vandyke brown, grind them well in beer, and mix with some mucilage made by dissolving gum arabic in hot water. Spread the colour evenly and not too thick over the ground colour, which must be quite dry and hard; then comb carefully in a vertical direction, first straight, then going over it again with a wavy or undulating movement of the comb.

The work is then permitted to get dry, and the lights marked in with a camel-hair pencil and water. When the water has melted the gum, these can be beaten out with a dry cloth flapped downward. Too much gum must not be used, or the work will be liable to flake off. The work is then gone over with a thin glaze of best umber, ground in ale, and applied with a flat over-grainer, as shown in Figs. 38 and 39.

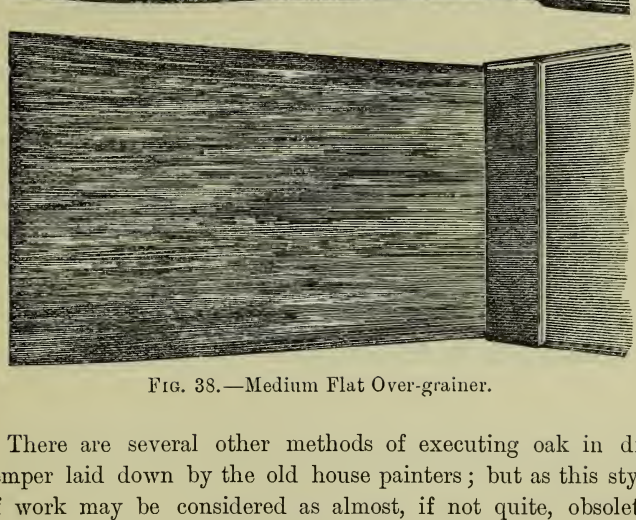


FIG. 38.—Medium Flat Over-grainer.

There are several other methods of executing oak in distemper laid down by the old house painters; but as this style of work may be considered as almost, if not quite, obsolete, there is no need to go further into the subject.

Oak Graining in Oil.—Opinions differ somewhat as to the tint most desirable for the ground. For the lightest variety of wainscot oak, white lead and yellow ochre mixed to the required tint are good. Some painters consider a white ground sufficient for light wainscot for inside work, but it is not every workman who can produce satisfactory results on such a

ground. For a darker ground, some Oxford ochre may be added to the two pigments named above, or Venetian red, Oxford ochre, and white lead may be mixed to the required tint. For dark oak, the proportion of Venetian red may be increased, and, to imitate very dark wood, burnt sienna or burnt umber may be added.

A very favourite ground with some grainers is composed of finely ground burnt umber and raw sienna, thinned with equal parts of oil and turps, with a good proportion of patent

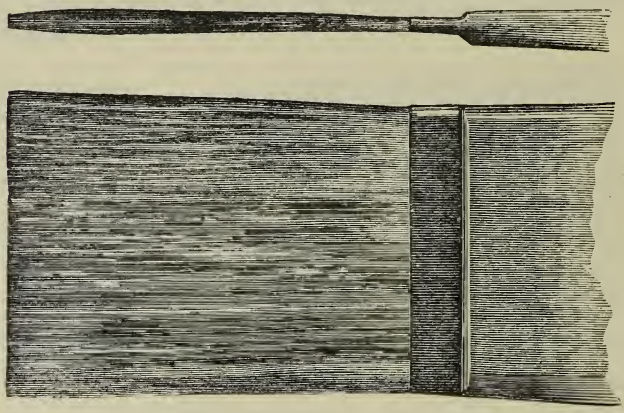


FIG. 39.—Thin Flat Over-grainer.

driers added. This should be rubbed rather sparsely over the surface of the work with a good-sized brush, taking great care that the colour is laid on evenly. In continuing this part of the subject I cannot do better than quote the excellent instructions of "An Experienced Workman," contributed to an excellent technical journal some years ago, and which have been borne out in practice:—"The graining colour is brushed over the work in the ordinary manner with a ground brush, care being taken not to put too much colour on, or else it is very liable to be dirty. A dry dusting

brush is now used to stipple with, which, if properly done, will distribute the colour evenly. It is now ready for combing. In the real oak, it will be found, as a rule, that the grain is invariably coarser on one side of the panel than on the other; this arises from the very nature of the growth of the tree; it is well, therefore, to imitate this pattern, and in order to do so we must first take a medium or coarse-cut gutta-percha comb, and draw it down one side of the panel; then use a finer one to complete it. This comb will leave the marks of the grain in clear, unbroken lines from top to bottom of the panel. We now take a fine steel comb and go over the whole of the previous combing, but in drawing this comb down we either move it in a slanting or diagonal direction across the previous grain or draw it down with a quick and short wavy motion or curl. Both the former and the latter motion will break up the long lines left by the gutta-percha comb into short bits, which of course represents the pores or grain of the real wood. It will be obvious that there are several other motions of the comb having the same end in view; and, by using the gutta-percha or cork combs in conjunction with the fine steel, an infinite variety of grain may be produced. A natural variation of this grain may be produced by one comb alone, according to the manner in which it is held. For instance, if we take a coarse or broad-toothed gutta-percha comb, and commence at the top of the panel with the comb placed at full width, if drawn down in this position it will leave a grain of the same width as the teeth of the comb; but if we start with the full width, and gradually turn the comb, or slightly incline it to one side—that is to say, on its edge—we thereby graduate the grain from coarse to fine at pleasure, and, by holding the comb at a certain inclination, we may actually make a very fine grain with the coarse comb. This style of combing is very useful for varying the grain upon the rails and stiles

of doors, or other woodwork, and a very great variety of grain may be thus produced. A very important point, requiring strict attention, is the formation of the joints in the wood, as much of the effect of otherwise good work is lost in consequence of neglect in this respect. In looking at a real oak door, the joints of the stiles and rails are clearly and sharply defined, not by any defect of workmanship, but by the difference in the run of the grain, the stiles being perpendicular and the rails horizontal. The rails, being cut sharp off by the stiles, show a perfectly straight line. The light also acts differently upon the two, simply because the grain or fibre of the wood is exposed to its influence under different aspects. This also tends to produce a difference in the depth of the colour of rails and stiles, and panels also. It will be evident that no imitations can be considered really good except they include these seemingly unimportant points."

CHAPTER XI

GRAINING

ON *Graining in Oil.* — I spoke in my last section of the necessity of imitating the joinery in all joiner's work, making particular reference to panel doors. To render this the more clear I would call attention at Fig. 40 to a sketch of an ordinary four-panelled door. Here, A A A A are panels, B B B B stiles, and C C C rails. In the panels the grain runs vertically from top to bottom; the same observation applies to the stiles; but the grain of the rails runs in a horizontal direction from left to right. If the door were made of oak all this would be clearly visible. Consequently, in graining a pine door in oak, we must imitate this as well as we can to produce good imitative work.

Figuring.—"Taking out the lights" or "figuring" (which is the imitation of the silver grain of the timber) must be done immediately the combing is done, and before the graining colour is dry. The appearance of these marks could only be correctly shown in a coloured diagram, but Fig. 41 is an approximation to the form of some of them. They run at right angles to the grain produced by combing. These lights are generally wiped out with a bit of chamois or wash-leather, doubled over the thumb-nail. The reader will notice that in the sketch there are faint straight lines beneath the darker waved ones, which is caused by the grainer first carrying down the graining colour straight from top to bottom, then going over

it again, moving the comb with a zigzag or wavy motion. Then he wipes out the figures. Instead of the chamois leather, sometimes a bit of rag is substituted. In either case the covering of the thumb should be frequently shifted, as it gets saturated with colour. As this operation is apt to strain or break the thumb-nails, some grainers make and use a kind of stall or

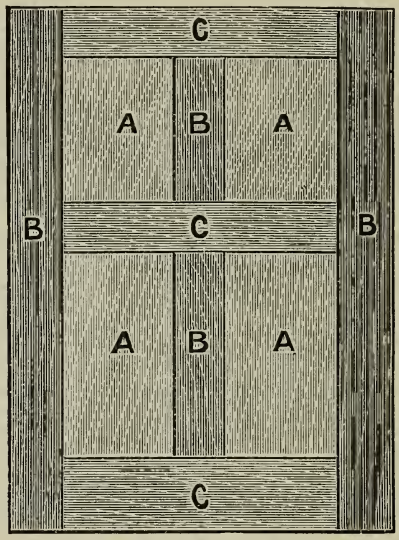


FIG. 40.—Panel Door.

protector by soaking a piece of thin sheet gutta-percha in hot water, wrapping it round the top of the thumb, and pinching and pressing it to the shape of the top of the thumb and nail. Others use a thumb-piece or veining horn, shown at Fig. 42, which is a piece of thin horn of a spatula shape. With this they scoop out the figure in a manner which cannot be described, and the knack of doing which it is difficult to teach by book. When the figure is wiped out the circumjacent

portions of the grain are "softened," that is to say, partially wiped out with a small roll of rag so as to render the grain lighter and less distinct for a short distance around the figure, thus imitating the appearance of the natural timber. Any knots that may be desired may now be put in with a pencil

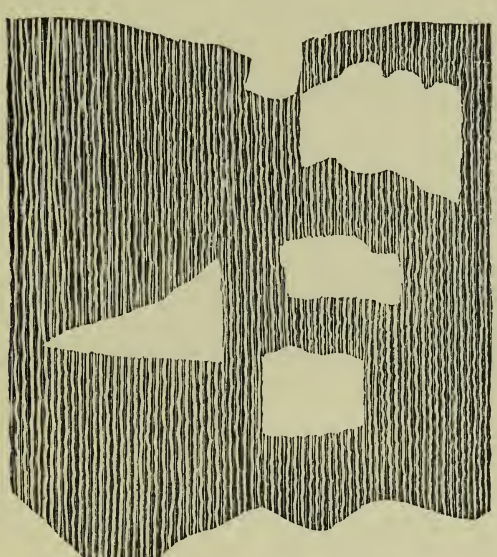


FIG. 41.—Figure of Oak.

or fitch, and the whole work be allowed to become perfectly dry.

Over-graining.—When quite dry, the job will be ready for the process termed over-graining. This consists in the super-application of another coat of paint — in this instance water colour. It is, however, evident that as the work has thus far been done in oil, a water colour would not adhere kindly.

Therefore it is necessary to prepare the painted ground for its reception. This is generally done by rubbing the surface of the work over with dry powdered whiting, applied briskly with a piece of flannel. Some prefer to mix fuller's earth in water and brush this over; others again adopt yeast. But as there is no need to wait for the whiting to dry, it is generally to be preferred. The next step is to grind a little burnt umber or Vandyke brown in water; dilute it with about equal proportions of beer (porter or mild ale in London, ordinary table beer in the provinces), and brush this over the work. The over-graining colour should be kept in a clean pot or other vessel, and applied with a hog's-hair over-grainer, which is a flat brush three or four inches wide with the hairs set in it

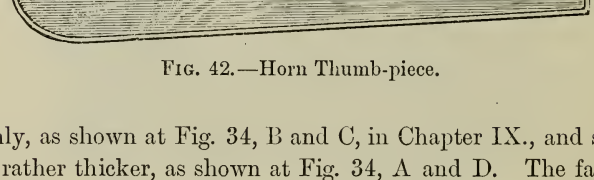


FIG. 42.—Horn Thumb-piece.

thinly, as shown at Fig. 34, B and C, in Chapter IX., and some are rather thicker, as shown at Fig. 34, A and D. The fact of these brushes being thin causes the hairs to separate into little tufts while in use, which lays the over-graining colour on in striations or streaks, thus resembling the natural appearance of the oak. Some decorators prefer brushes where the hair is already gathered into small bunches, which are known as "castellated" over-grainers, as illustrated at Figs. 43 and 44. The brush is dipped in the colour and drawn over the work, generally from the top to the bottom, but occasionally from side to side, the better to imitate the variety found in nature. It may be mentioned that some workmen divide the hairs of their over-grainers into tufts or bunches by the aid of a horn

comb, precisely like an ordinary dressing comb, only that the teeth are all at an equal distance apart. If there are any knots in the work they may be touched up and emphasised in the over-graining. When the work is perfectly dry, but not

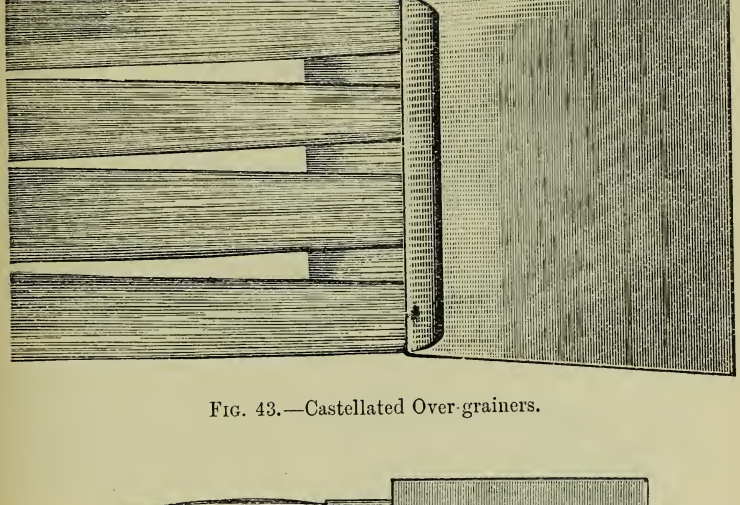


FIG. 43.—Castellated Over-grainers.

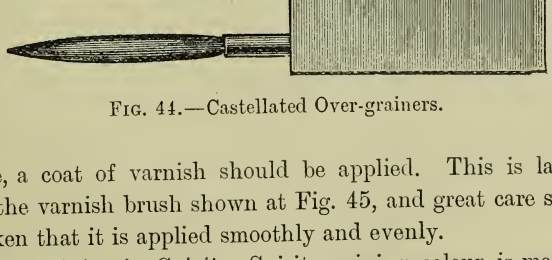


FIG. 44.—Castellated Over-grainers.

before, a coat of varnish should be applied. This is laid on with the varnish brush shown at Fig. 45, and great care should be taken that it is applied smoothly and evenly.

Oak Graining in Spirit.—Spirit graining colour is made by

rubbing up some whiting in turps on the slab; to this enough burnt umber and raw sienna are to be added to produce the required tint. The pigments must then be diluted with turps, gold size, and a small portion of boiled oil or common varnish to the required consistency. The colour should be strained through a piece of fine muslin before using. This colour is applied to the ground already laid on in oil and combed as before directed; but, as it dries very quickly, too great an

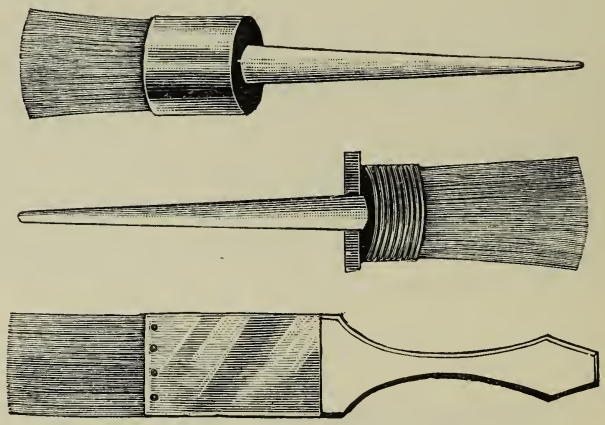


FIG. 45.—Varnish Brushes.

extent of surface must not be coated at a time. When the combing has been finished about half an hour, the lights may be taken out. This is effected rather differently than in graining in oil. Some of the spirit graining colour is thinned down by the addition of some turps. A veining fitch, as illustrated at Fig. 46, is then dipped in this colour, and the form of the light or figure painted upon the coated surface. In about a minute this can be rubbed with a bit of dry old flannel, which will remove the graining colour from the place painted, exposing the light coloured oil ground in the form of the light or

figure. The half-lights which surround the light may then be produced by removing some portion of the graining colour for a small distance around it by rubbing carefully with the flannel. The work is afterwards over-grained as described for oil graining.

Mechanical Graining.—Endeavours to supersede the grainer's deft hand by mechanical expedients have, as I have before remarked, been numerous. One was what may be called the transfer process, invented some years since by Mr. Henry Bradbury, of the well-known firm of printers. In this process

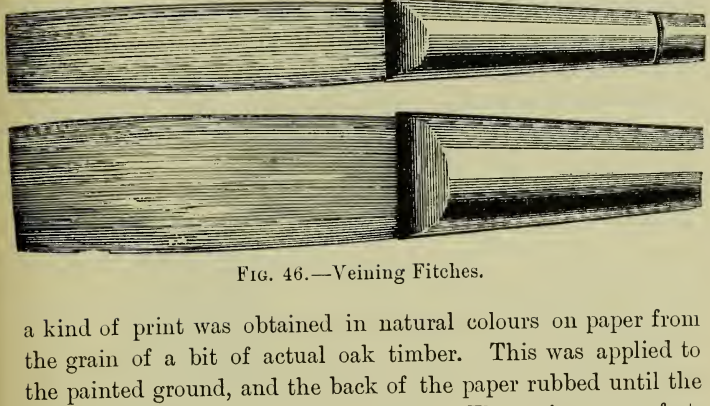


FIG. 46.—Veining Fitches.

a kind of print was obtained in natural colours on paper from the grain of a bit of actual oak timber. This was applied to the painted ground, and the back of the paper rubbed until the pattern adhered to the painted surface. The grain was perfect, but the general result painfully monotonous. Another and more successful mechanical adjunct is the over-combing or graining rollers. These are rolled over the combed surface of the work, say done in oak; they produce a good effect, and are doubtless useful to inexperienced workmen, but their productions are always monotonous and repetitive, and cannot vie in spontaneity and variety with good hand work.

Pollard Oak. — A pollard, or rather pollarded, tree is one that has been shortened by the hand of man, so that in place of growing to its natural height it forms a head ("poll") at the place where it has been cut off, and branches out from that point. This causes the timber to be very full of knots, curls, and markings generally, as is peculiarly noticeable in walnut so treated, which is known as "burr" walnut, and is in great request for pianoforte cases and superior cabinet-making generally. For imitating this wood in oil the ground colour may be of a warm buff, as for light wainscot oak. This may be prepared with white lead, chrome yellow, and vermilion, in due proportions. The graining colour may be burnt sienna and Vandyke brown ground separately in boiled oil, very stiff, then mixed and thinned with turps. The colour can be rubbed thinly on the work with a large sash tool. The thin over-grainer should then be dipped in the colour and dabbled over the still moist surface in a bold, free style. Some burnt umber should also have been ground in oil and thinned with turps. Into this the brush should be dipped and a series of dark knots formed. This may be rendered much more natural by pressing the end of a cork on each, and imparting to it a circular motion. When the colours are set, the over-grainer should be dipped into a thin glaze of burnt umber, and some grain put in of a curling character from knot to knot.

Mahogany.—It is said to have been in imitation of that splendid foreign wood that the first specimen of graining by means of paint was executed in England in 1798. Anyone gazing on a bit of common Honduras mahogany would scarcely deem it worthy of imitation; but if he be standing before a fine plank of Spanish mahogany, well painted and polished, he will see ample reason to change his opinion. Indeed, he will need so to carefully study the real wood before he attempts to imitate it. Mahogany is almost invariably imitated in distemper, being afterwards varnished. The

ground colour may be of Venetian red and white lead mixed to the tint required. It should be of a pinky crimson when laid on, not unlike carmine. Some grainers add yellow ochre, and some substitute orange chrome for this, but most dispense with the yellow. This colour must be mixed quite smooth,

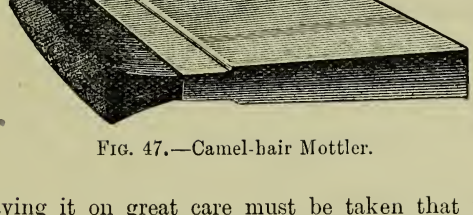


FIG. 47.—Camel-hair Mottler.

and in laying it on great care must be taken that no marks of the brush are apparent. When the ground is quite dry it can be "cissed" or gone over with whiting and water, to prepare the surface for the reception of the graining colour. This latter may be of Vandyke brown and burnt sienna, or Vandyke brown alone, or any combination of brown and

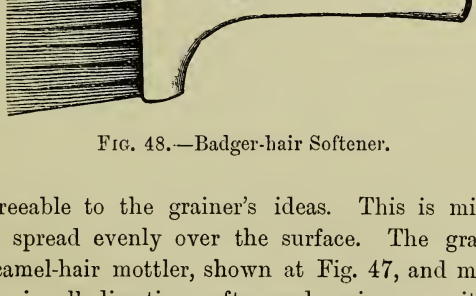


FIG. 48.—Badger-hair Softener.

black agreeable to the grainer's ideas. This is mixed with beer and spread evenly over the surface. The grainer then takes a camel-hair mottler, shown at Fig. 47, and mottles the wet colour in all directions, afterwards going over it with the badger-hair softener, shown at Fig. 48. Some grainers prefer

to do the mottling with a piece of sponge, which is dabbled with great freedom on the moist surface so that it takes out the light boldly in a direction from side to side of the panel, and with a curved upper outline. The tool or sponge must be so manipulated that these curves take something of a serpentine line, and that they are alternately light and dark. The operation should be performed rapidly and adroitly; the lights especially should be wiped out quickly. When this is finished, take the softener, shown at Fig. 48, and blend the edges of the light parts and the wet colour together, taking care to use the softener in the direction in which the dark veins of the mahogany are intended to run. These will run in the direction of the light, both above and below it. If not sufficiently defined and pronounced, take a deeper tint of Vandyke brown, and form the heavy veins with the tool, making some touches darker than others. The most pronounced lights may be taken out with a damp wash-leather and the thumb-nail. The whole should be finally softened with the badger. When the work is dry, over-grain with Vandyke brown mixed with very weak beer and water, applied by a thin flat hog's-hair over-grainer, the hair of which has been divided by a comb, the teeth of which are irregular. Soften with care so as not to disturb the underlying colour.

Rosewood.—This very beautiful foreign wood was a great favourite with the last generation as a furniture timber, although for many purposes walnut has to a considerable degree superseded it in the present day. An excellent writer has aptly remarked anent this fine wood: "There is so great variety in the form and colour of this most elegant wood, that it is almost impossible to find two specimens alike, and nothing is more common than to hear good imitations of rosewood pronounced unlike nature, by persons who are not used to it in its varied forms. It will be therefore

necessary for the painter to procure several pieces of veneer, and imitate them as closely as possible. The learner will by that means form his style upon the variety in nature, and will be more likely to produce pleasing and striking representations; for it is of but little use to copy the productions of nature that are little known and consequently hardly recognised." The ground colour for all descriptions of rosewood can hardly be too brilliant. It is generally of a bright red, made from white lead, chrome yellow, and vermilion. This is, however, lacking in that crimson element which should be present, for the ground colour of the wood is a beautiful rosy red. Carmine would be very useful, but is of course far too expensive for ordinary use. The old decorators employed crimson lake, which is of a pure carmine hue; but as this pigment is apt to fly, modern painters have discarded it. As, however, the work should be varnished, a portion of crimson lake can be mixed with the ground with tolerable safety and the certainty of improving the colour. If expense be not a very primary object, a little rose madder may be substituted for the lake with advantage. When the ground is quite dry, have some Vandyke brown, mixed nearly opaque, and with a small tool spread the colour in various directions over the ground, then with a dry brush beat the colour whilst wet against the grain, that is, the opposite way to which it was laid on. Before the colour is dry take a bit of chamois leather, on the end of a stick, and with great freedom take out the light veins that appear to be part of the veins formed by a knot. Then have ready the darkest tint of Vandyke brown (a little ivory black can be mixed with it if desired), and with a sable pencil give free and strong touches under the parts taken out by the leather, and in parts where the ground is thinly covered. Next blend and soften the whole with the badger hair softener, and finally varnish. Nathaniel Whillock, an excellent old authority on the subject of graining, has

some remarks upon extemporaneous tools, which I think it well to introduce here : "Every experienced grainer forms for himself a variety of tools that are useful in his peculiar style of painting. I have recently seen a most beautiful specimen of painting in imitation of rosewood, the grain of which was so fine, and varied with such apparent skill, that I was anxious to ascertain the kind of brush made use of to produce it, and was most agreeably surprised on being informed that it was merely the feather of a goose-quill. I have tried the effect it will produce in mahogany, rosewood, pollard oak, and maple, and can recommend it to the practitioners as a tool that may be used with great effect, and can generally be obtained with ease. It may be necessary that a number should be procured, as they soon get wet, and are useless in that state."

Bird's Eye Maple.—The manipulation of the imitation of this pretty wood varies in some particulars from the usual procedure. The ground colour is of white lead with a little chrome yellow. Some decorators use a plain white ground. The graining colour is composed of equal parts of burnt umber and raw sienna mixed in ale to a proper consistence, some thin, and a small portion mixed a little thicker. The first is

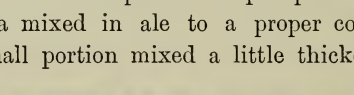


FIG. 49.—Maple Eye Dotter.

spread evenly over the ground in the usual manner. Then a sash tool or a piece of sponge is dipped in the darker colour, and the dark shades are put in. The whole surface of the work is then freely mottled, and afterwards softened with the badger-hair tool. Before the colour is dry, the ends of the fingers are freely dabbed over the work to put in the "eyes." Some grainers prefer to put in the eyes with a camel-hair brush, known as a maple eye dotter, and shown at Fig. 49. When

the work is dry, the top grain is put on with a camel-hair pencil to imitate the small hearts of the wood. The mottlers employed are generally made of camel's hair, and are of various widths. One of these is shown at Fig. 47. Fig. 50 shows what

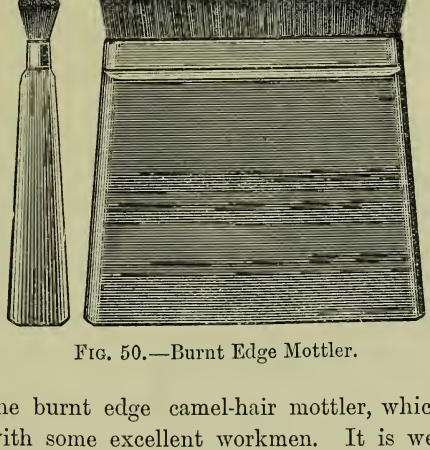


FIG. 50.—Burnt Edge Mottler.

is termed the burnt edge camel-hair mottler, which is a great favourite with some excellent workmen. It is well to shade under the eyes with a sharp touch of burnt sienna, as it shows them up and imitates the natural appearance. The maple eye shader, shown at Fig. 51, is very useful for this purpose. The

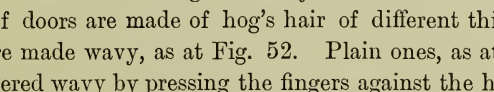


FIG. 51.—Maple Eye Shader.

broad mottlers for forming the wavy dabbles on the stiles and panels of doors are made of hog's hair of different thicknesses. Some are made wavy, as at Fig. 52. Plain ones, as at Fig. 53, are rendered wavy by pressing the fingers against the hair as the brush is used. A different kind of over-grainer is employed

for maple from that for oak. This is the sable tube grainer shown at Fig. 54, which leaves a series of faint parallel lines. The lines forming the heart of the wood require to be put in with a single sable or camel-hair pencil.

Ash.—This is an extremely useful tree, but the grain of the English ash is not distinctive enough to render it worthy of imitation generally. Some specimens of the fine imported Hungarian ash are frequently very beautiful. The principal characteristic of ash timber is its silvery mottle, not unlike that

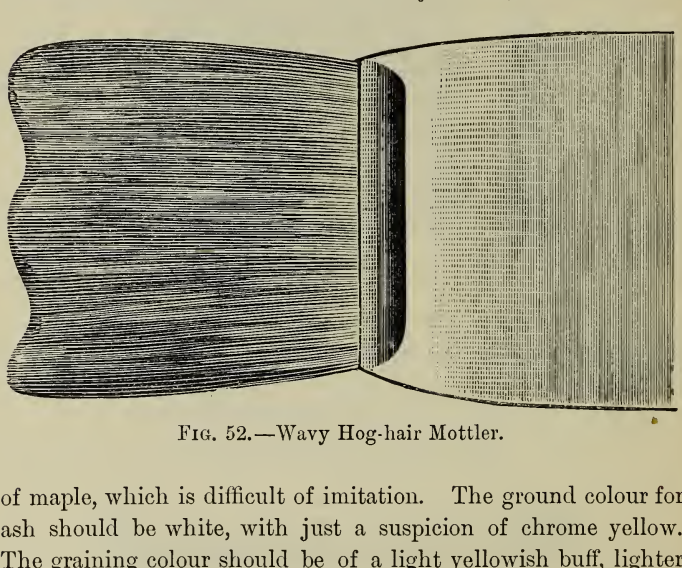


FIG. 52.—Wavy Hog-hair Mottler.

of maple, which is difficult of imitation. The ground colour for ash should be white, with just a suspicion of chrome yellow. The graining colour should be of a light yellowish buff, lighter than the ground of maple. In applying this it should be laid on with a circular movement, to imitate the natural grain. Then the mottle is to be put in carefully with a pencil. When this is dry, the panel can be glazed with black and brown pigments mixed and then gone over with the mottler.

Satin Wood.—The ground may be white or the very palest buff. The graining colour is one-third raw sienna and whiting

ground in ale, very thin. Soften while the surface is still wet, and take out the lights with a mottler. Blend with the badger-hair tool. When the work is dry, take the flat over-grainer, and, with the same colour, put in the top grain.

Coral Wood.—This Singhalese timber is very beautiful, but it is not so much used in cabinet-making as it was sixty years ago, and hence imitations are not so frequent. The ground colour may be of white lead and vermilion, and the graining

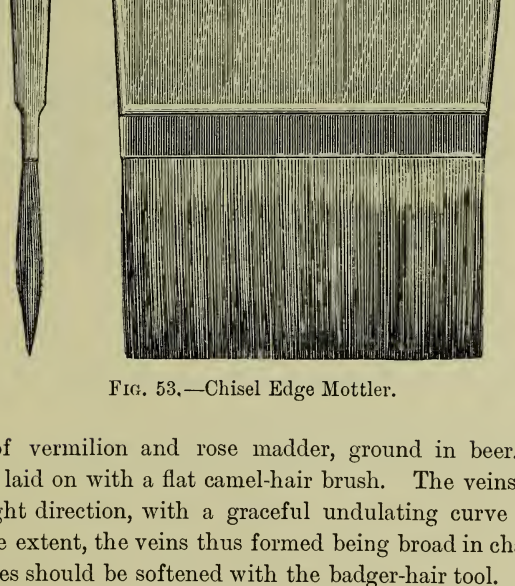


FIG. 53.—Chisel Edge Mottler.

colour of vermilion and rose madder, ground in beer. The latter is laid on with a flat camel-hair brush. The veins run in an upright direction, with a graceful undulating curve of considerable extent, the veins thus formed being broad in character. The edges should be softened with the badger-hair tool. When this colour is dry, take Vandyke brown, and, laying the flat hog-hair brush over the red veins, draw it over them in parts, taking care so to handle the brush that it may bring the dark shade up to a point. After this a fine comb may be applied;

this will give the effect of a dark vein running into the other. The young workman should have a good piece of coral wood veneer by him in his early attempts, and follow it closely, especially as the natural wood varies much. The whole work should now be gone over with the softener and varnished.

Yew.—The ground is a reddish buff. For the graining colour, grind equal portions of Vandyke brown and burnt sienna, along with a small portion of raw sienna, in ale. When the ground is dry, spread the graining colour evenly over it. Next rub the work across and across with a piece of cork cut to a sharp edge, so as to form a fine grain something like maple. Then soften. Dip the fingers' ends into the graining colour and dab them on

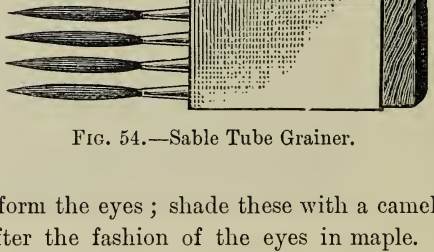


FIG. 54.—Sable Tube Grainer.

the work to form the eyes ; shade these with a camel-hair pencil somewhat after the fashion of the eyes in maple. When the work is dry put in the top grain.

Olive Wood.—The wood of the *Olœa Europœa* is a good deal used now for small work. The ground is of an orange buff. Vandyke brown forms the graining colour. The veins, some of which are large and some small, run longitudinally of the timber side by side, with occasional bifurcations. They must be put in with a pencil.

Hair Wood.—For the ground colour take white lead and thin it with turpentine, and slightly stain it with equal quantities of Prussian blue and black. For the graining colour

prepare in all a mixture of Prussian blue and raw sienna. When the ground is dry, spread a transparent coat of the graining colour on the surface of the wood, and soften. Then, with a mottler, cross the work to form the long fine grain or mottle. When this is done, soften and top grain in a wavy but perpendicular manner.

Patterns. — I have already advised the young grainer to carefully observe all actual specimens of good wood which may come under his notice. But besides this he ought to endeavour to form a small collection of actual specimens from which to practise. These he can readily obtain of all the more usual woods, in the shape of small pieces of veneer. These can be obtained at the veneer mills, or dealers in veneers, of whom there are several in the vicinity of the Curtain Road, Shoreditch, in the east of London. The cost will be but trifling, but it is well to get as large a sample as practicable. The bits of veneer should then be glued to a piece of pine board, planed up, finished off with glass-paper, and varnished or french-polished. The painter can do all this for himself if he is able and willing. But a better job will be made of it for him by a cabinet-maker. He should copy each specimen in paints several times over until he is quite familiar with the natural scheme of the grain which it exhibits. Rare woods, when he cannot obtain them, the learner should interview at Kew, where there is a fine collection, or wherever he can meet with them. If he possess a small sketch-book and a box of moist water-colours, he will do well to make careful sketches of all unusual or interesting grains he may come across.

CHAPTER XII

GILDING

MATERIALS.—Gold is not only the most attractive of the metals, but may also be considered, by the common consent of humanity, the most beautiful of earthly substances, except perhaps a few rare gems. Such being the case, it is little wonder that the precious metal was used both in personal adornment and in architectural decoration at a very early period. There are plentiful allusions to gold, both in the sacred Scriptures and in the poems of Homer. We know that the wise Hebrew King Solomon overlaid the precious woodwork of the Temple with plates of gold. As a Christian poetess sings—

"So gold o'er the carvings they laid ;
Whate'er for the inside was made
Of fane for Israel's God
Was covered with costliest gold,
That all-seeing eyes might behold,
As they had while the ages unrolled,
No spot on His abode."

The researches of Dr. Schliemann among the burial-places of the ancient Greek heroes and chiefs have proved that these were buried with small golden masks covering their faces. Gold is a very ductile metal, and no doubt mankind found out at a very early date that it was possible to work it into very thin plates. At what time actual gold-leaf—that is to say,

laminæ of extreme tenuity beaten out—was produced we do not know; but Pliny mentions it, and doubtless it was in common use at an early period of the Middle Ages, for many of our most ancient illuminated manuscripts are enriched with gold, and that applied in the form of leaf. Certainly it is nothing like so thin as that used at the present day, but it is undeniable gold-leaf for all that. Speaking generally, it may be stated that there are but two ways of producing golden surfaces at the present day—first, upon metals, by the agency of electricity, and secondly, upon all other substances by securing leaf-gold to them with some kind of cement. Gold-leaf is prepared by a class of artisans known as gold-beaters. There is no need here to enter into any details of the process of its preparation. Suffice it to say that by the operation of beating it with a heavy hammer the gold-leaf is reduced to the marvellous state of tenuity in which we see it, when it is estimated to be not more than the 282,000th of an inch in thickness, and some modern French gold-leaf does not exceed the 480,000th of an inch in thickness. This beaten gold is cut into leaves $3\frac{1}{4}$ inches square, and these are placed singly between the leaves of a small square book, the paper of which has been well rubbed with bole Armenian to prevent the gold adhering to the leaves. Gold-leaf is sold by the thousand leaves, and gilders reckon their work by the number of "hundreds" of gold-leaf that are required. As each book contains twenty-five leaves of gold, four books go to the hundred. Bought separately, a book of twenty-five leaves usually costs 1s. 3d. or 1s. 4d. Care should be taken to procure the gold-leaf of a respectable vendor, or disappointment may ensue. Pure gold is too ductile to work properly under the heavy hammer of the gold-beater, and it is therefore customary to alloy it to a slight extent; generally about six grains of alloy are allowed to one ounce of gold. The alloy is either silver or copper, and the appearance of the gold-leaf is variously modified according to

which alloy is employed. As a rule, in this country three degrees or colours are recognised in leaf-gold—"pure virgin," "yellow" or "medium," and "deep." Pure virgin is alloyed with silver, and is a yellow so pale that it approaches to white. On the other hand, deep gold, which is alloyed with copper, partakes considerably of the deep colour of that metal. Medium gold is found most suitable for general purposes, but especially for the writer, besides which it stands exposure to the weather better than the other varieties. Books of gold-leaf should be kept carefully in a dry place, as humidity is liable to discolour the leaf for some distance from the edge. Besides this, it is apt to cause it to adhere to the book, and so render it unusable. There are some foreign imitations of gold-leaf, and a species of very thin tinsel, made from an alloy, and known as Dutch metal, but neither of these is of any use to the writer or sign painter. The mordant, or agent used to fix the gold-leaf, differs in different classes of work. Sometimes parchment size and glair, or beaten-up white of egg, is employed. This is termed water gilding. In the oil gilding of picture frames and console glasses gilders' size is generally the agent. This is composed of yellow ochre ground in fat oil. Writers sometimes use this, but it is apt to be too thick to work pleasantly, especially in cold weather. More frequently the writer and sign painter employ japanners' gold size.

Tools.—The tools required for gilding are not numerous. First comes the gilder's cushion. This may be of any size considered desirable, but is generally eight inches by five inches, or thereabouts. It is formed of a piece of flat board upon which a couple of thicknesses of flannel or baize are placed, the whole being covered by a piece of plain calf-skin, such as is used by bookbinders, nailed round the edges. This leather has the flesh or rough side outwards, and is shown at Fig. 55. This is the general form of the gilder's cushion. For the writer it is generally furnished with a screen of parchment

or vellum around one end and half one side, or perhaps half both sides. This is to keep the wind away from the gold-leaf. A loop is provided underneath to slip the thumb of the left

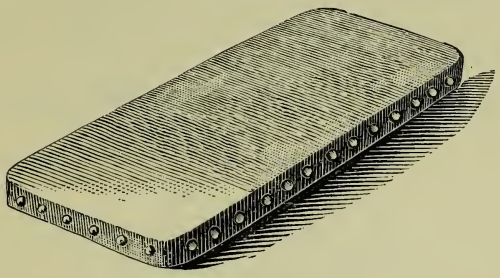


FIG. 55.—Gold Cushion.

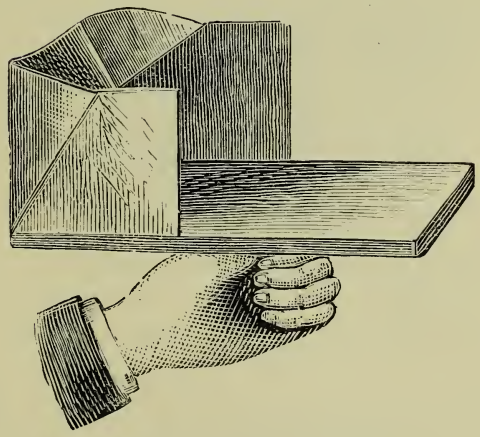


FIG. 56.—Portable Gold Cushion.

hand through, as shown at Fig. 56. Before using the cushion the surface of the leather is rubbed over with bole Armenian or red ochre to prevent the gold adhering. For cutting the

gold the writer uses a knife with long flexible blade, shown at Fig. 57. This should be kept quite clean, and with a rather sharp edge, that is to say, it does not require to be brought to an extremely fine edge on the oilstone, as it cuts the gold-leaf by a kind of sawing action. The edge is placed on the gold

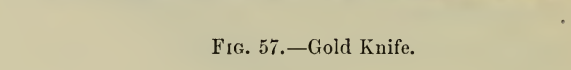


FIG. 57.—Gold Knife.

at the place where it is wished to divide it, and the knife, held firmly and pressed down on the cushion, is worked gently to and fro a little way, when the leaf is easily divided, as shown at Fig. 58. The most usual adjunct for lifting the gold is the common gilder's tip, shown at Fig. 59. This is formed of a few fibres of sable or other soft hair, secured between two pieces

FIG. 58.—Cutting Gold.

of cardboard. To lift the gold the tip is lightly drawn across the workman's forehead or hair. This greases the hair of it to a slight degree, and when they are applied to a bit of gold-leaf it immediately adheres, and may thus be lifted. A hare's tail or bit of cotton wool similarly greased is sometimes used, or even a piece of paper doubled, and its doubled edge applied to

the edge of the bit of leaf will serve to lift it. The writer, however, generally lifts his gold by the entire leaf in the manner to be hereafter described.

Writing.—There are two different ways in which the writing for gilding may be executed. In the old days it was customary to paint the inscription in yellow, and subsequently go over it with size, upon which the gilding was executed. This doubtless gave a good foundation for the gold-leaf, and caused the work to appear sound and solid. This method is, however, too

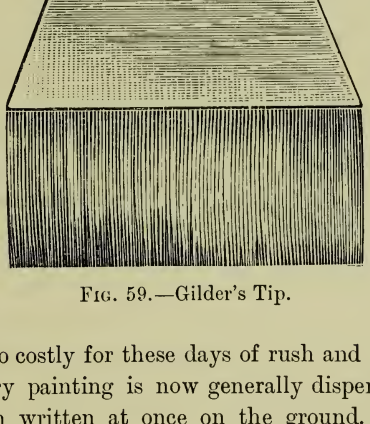


FIG. 59.—Gilder's Tip.

tedious and too costly for these days of rush and cheapness, and the preparatory painting is now generally dispensed with, and the inscription written at once on the ground. The ground, say a fascia, being newly painted, will to some degree be "tacky" or sticky upon the surface, and, as the very slightest tackiness or greasiness will seize and retain gold-leaf, it is necessary to destroy this character of the ground as a preliminary operation. This is done by what is termed "pouncing," which is done by putting some dry finely powdered whiting in a little linen bag, which can be used as a pad, and dabbing it all over the ground. Sufficient of the whiting will

escape through the interstices of the linen to powder the fascia, from which any loose superfluous particles should be whisked off with a silk handkerchief. This will be sufficient for a dark ground; but if it be light it will be necessary to mix some finely powdered pigment with the whiting, in order that the decorator may be assured that the whole of the ground is pounced over. This pouncing powder is wiped away after the writing is gilded with a piece of damp wash-leather. The writing is now proceeded with. As we have already stated, japanners' gold size is the best substance to use. It will require some practice to work in this with ease, as it is thick, and causes the sable brush to be difficult to manipulate. This medium dries quickly, and the gold-leaf may be applied soon after the writing is executed. This enables the work to be proceeded with rapidly. If there is no haste, oil varnish is added to the gold size, which should then retain sufficient tackiness until the next day. Linseed oil should not be added. Gilders' size is thicker than japanners' gold size, and more difficult to work with. This retains its adhesive qualities for a day and a night, and, indeed, keeps more or less of tackiness for several days.

Applying the Gold. — Where the writer gilds from the cushion it is usual to blow out half a dozen leaves of gold into the corner of the parchment screen of the cushion, then to bring each to the centre of the cushion as required. This is effected by passing the blade of the gold knife under it and lifting it carefully to its place. It is sure to be more or less crumpled or wrinkled, but a slight puff of breath, directed exactly in the centre of the leaf, will render it level. It can then be cut to size, and applied to the varnished letters by lifting with the tip or otherwise. Some writers dispense with the gold cushion entirely for outdoor work. They simply fold back the upper leaf of the gold book, then apply the first leaf of gold to the letters, which immediately seize it. This operation, however, requires much dexterity, and is apt to prove

wasteful. Perhaps the readiest and safest plan of procedure is the following: Procure a sheet of thin tissue paper, perfectly smooth and unrumpled. This is to be laid upon a perfectly flat surface and rubbed all over with a bit of wax held in the right hand. White wax is the best to use for this purpose, but beeswax will do. The sheet of tissue paper is then to be cut up into square pieces a little larger than the leaf of gold. This waxing of the paper will give it sufficient "tack" to enable it to hold the gold-leaf safely. The book of gold is then opened and the bit of waxed paper gently pressed on the first leaf. When it is raised the gold will be found to have adhered to it. This can be done in the shop, and the pieces of paper, with the gold adhering, piled one on the other. Arrived at the place of work the gilder takes the papers one by one, and, placing the surface to which the gold adheres against the sized portion of the fascia, rubs the back of the paper gently. When the paper is withdrawn the gold will be found to have left it and be firmly adhering to the sized surface. Thus the writer proceeds until all his work is gilded. This method of applying the gold-leaf has the advantage of being the most saving plan of all. Whichever method be adopted, the gold-leaf, after application, is gently dabbed down with a dabber of cotton wool, which promotes adhesion, renders the surface smooth, and catches up the superfluous gold.

Shading, etc. — Gilded letters, like painted coloured ones, may be enriched, when desired, by a thickness or a shade. The procedure is of course quite the same as with writing executed with paint, a mixture of yellow ochre and burnt sienna being employed for shading.

Double Gilding.—In the olden days, when work was done much more deliberately and was much better paid for than it is in our time, work was often what is termed double gilded, and we find the term familiarly used by Shakespeare and the old dramatists. Gold-leaf being reduced to a condition of such

extreme tenuity, is of course easily broken, and, when applied to any surface in that condition, exhibits irregular cracks or fissures. It was not at all uncommon for the ancient writers to lay a second coating of gold-leaf on their work, which of course involves a second application of varnish, but it is seldom done in the painters' trade. Some picture-frame gilders and many bookbinders' finishers, however, still use the gold-leaf double, and by this means any cracks in the one leaf are covered by the second.

Dutch Metal.—This is a very thin metallic tinsel of a golden colour, which is sometimes used in common domestic ornamentation at festive seasons, or in common scenic effects. Neither it, however, or any other imitation of gold, is of the slightest use to the decorative painter.

CHAPTER XIII

WRITING AND LETTERING

GENERAL REMARKS.—The art of writing or lettering is a very important branch of the house painter's business, and by no means a universal qualification. In fact, it is to a great measure in the hands of certain members of the craft who have studied the subject and lay themselves out for the practice of that description of work. Nevertheless, it is certainly to be advised that the apprentice and young workman should sedulously endeavour to acquire the art, seeing that he is sure to find such knowledge both useful and profitable, and can indeed scarcely dub himself a complete house painter without it. "Writing," in the painter's sense, like writing in the commercial acceptation of the term, is a thing which to a certain extent "comes by nature," that is to say, some men's faculty of mind, eye, and hand enables them to acquire it much more rapidly and perfectly than others. Much of this arises, doubtless, from the fact that the subject is not one which can be taught by hard-and-fast rules, but depends greatly on the judgment of the operator, and still more upon that unerring dexterity of hand which is the outcome of long practice. It might be supposed that nothing would be easier than to lay down a set of rules for the shaping and proportioning of any sets of letters, but as a matter of fact no such canons exist for the guidance of the painter. Numberless have been the attempts to compile such rules, many of which

may be found in the ponderous treatises of the old writing masters, but they may all be considered as well-nigh useless, and the aspirant is necessitated to learn his art, as his predecessors learned it, by the careful and assiduous copying of the best examples he can obtain.

Sign Painting.—The art of sign painting follows naturally upon those of writing; like the latter, it can scarcely be strictly considered a branch of house painting, but it is, at least, so closely connected with it as to come legitimately within our purview. It is probable that the custom of having some mark to denote houses of public hospitality, and even bazaars and shops, is of high antiquity. The buried cities of Herculaneum and Pompeii yield us sufficient evidence that the ancient Romans were not unacquainted with the custom. In the early Middle Ages in our country, it would appear that a hostelry or inn was indicated by hanging out a bush, whence the proverbial phrase, "Good wine needs no bush." It would appear that signs were introduced into England from France during the reign of Edward III., and rapidly became so popular that nearly every London shopkeeper had one outside his premises, great ingenuity being displayed in the invention of signs calculated to prove the most attractive to passers-by, and large sums of money were expended in this species of advertising. The signs were placed on posts, or hung thereon on hinges at the edge of the footpath, but were not affixed to the buildings. So largely did they increase that they absolutely impeded the free circulation of air, and were supposed to be amongst the causes of the frequent epidemics of London. They also materially aided the spread of conflagrations, and on these grounds were afterwards forbidden, on pain of a penalty. In the old days it was not at all uncommon for artists of much merit to devote their abilities to occasional sign painting, especially when their exchequer was low. Many of the Flemish and Dutch painters who afterwards became famous

figured in this rôle. So also, amongst ourselves, did the famous Hogarth and George Morland, the celebrated animal painter, whose dissipations won for him the sobriquet of "Drunken Morland." A good sign painter requires to possess much of the talent of the regular pictorial artist, and only those possessed of artistic abilities should take up this especial line. Those who possess the ability will require no teaching from me, and to those destitute of them no teaching can be of any avail. We may, however, mention that, in the copying of sketches for signs, the method of "squaring off" will be found very useful in enabling any ordinary painter to execute a sign for some small illustration on an emergency.

Heraldic Painting.—In this connection we may allude to the painting of coats armorial or coats of arms. These crests as placed upon the carriages of the aristocracy and wealthy classes are executed by a special and highly paid class of men known as herald painters. But it may easily happen, especially in the provinces, that even ordinary house painters may be called on to execute a coloured coat of arms over the stables or other offices of a country squire, or a hatchment for an undertaker. Should such be the case, it is by no means improbable that an uncoloured engraving of the arms will be put into his hands as a guide. In such a case the following information will prove useful. In all representations of armorial bearings, the engravers have hit upon a systematic and well-understood manner of representing the colours of the different parts of the shield. These consist generally of lines, differently disposed, as shown at Fig. 60. These colours are as follows (see the shields on diagram):—1. Or, or gold, represented by small dots; in painting, by golden yellow or preferably gilding. 2. Argent, silver, represented by a blank; in painting, by white or preferably silver. 3. Azure, blue, represented by horizontal lines. 4. Gules, red, by vertical lines. 5. Vert, green, by diagonal lines from the dexter (or right-hand side)

upper corner of the shield to the sinister (or left side) lower corner. 6. Pourpre, purple, indicated by diagonal lines in

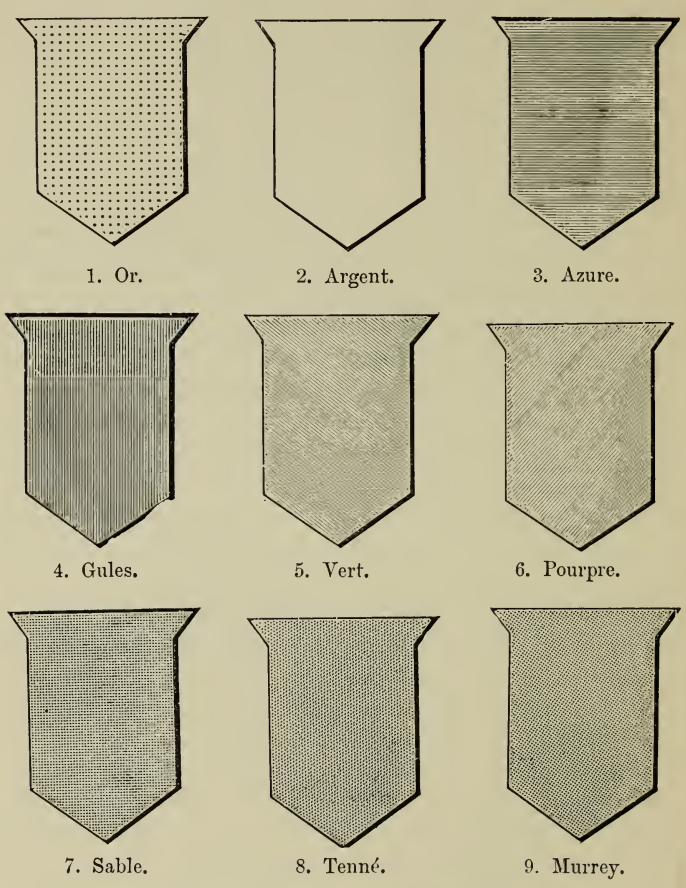


FIG. 60.—Heraldic Tinctures.

precisely the opposite direction to those of vert. 7. Sable, black, by vertical and horizontal lines intersecting each other.

The foregoing are all the tinctures or colours admitted into modern English heraldry. But if the sketch given to the painter be an old one, he may find a couple more, which have now fallen into desuetude, namely, 8. Tenné, tawny, shown by diagonal lines like those of number 6, purple crossed by the vertical ones of number 4, gules;—this is much about the colour which naturalists call fulvous, and which is the hue of the fur of many wild animals;—and 9, Murrey, or sanguine, a blood colour, represented by diagonal lines intersecting. The ordinary red of heraldry, gules, is represented by scarlet or vermilion; but murrey is shown by an intense crimson. We need say no more on this subject. If the painter finds that any considerable amount of this kind of work is likely to fall in his way, it would be well that he should devote a little study to some small and cheap manual of heraldry, of which there are many in the market.

Distempering.—In former days various media were employed to find the colour applied as a decoration to large wall spaces. What the ancient Egyptians employed we do not know. The Greeks appear to have made great use of wax, used with heat; and the Romans, of various saps and the white and yolk of eggs, the latter substance being also much utilised by the tempera painters of the Middle Ages. Even after oil painting had been invented and brought down to home decoration, it was principally applied to the woodwork of houses only, and some cheaper method was resorted to for the adornment of large wall surfaces, cheap paperhangings not being then procurable. Even still, although to a great degree superseded by the cheap productions of the paper-stainer, this species of wall decoration, known as "distemper," is not altogether obsolete, and the house painter still recognises it as a branch of his art. The term "distemper" is generally applied to pigments mixed with water and parchment or glue size only. The whitewash applied to ceilings is therefore a

form of distempering. For this purpose the process is indubitably better than oil painting, for, besides that its cheapness admits its more frequent renewal, the white obtained is much clearer and purer than it would have been if it had been mixed with oil. It is the same where different pigments are applied to distemper colours. In all cases the lines obtained are brighter and purer than corresponding oil paints. The due preparations of ceilings and walls for finishing in distemper is of great importance towards achieving a satisfactory result. The absorbent power or "suction" of plaster is great, and varies much even in the same piece of work or the same wall. This probably arises from unequal finish of the plasterer's work. In any case it must be carefully neutralised if it be desired that the finishing colour or coat should be laid on cool, smooth, and uniform in tint. To obviate this as much as possible, the following preparatory should be applied to the plastered surface: Twelve pounds of best whiting mixed with water to which sufficient size has been added to ensure binding, and carefully stirred together till the solution is rather more fluid than thin lather. To this a couple of ounces of alum and the same quantity of soft soap, both previously dissolved in water, should be added. Distemper ground colours are generally applied to ceilings or walls with a brush of the kind shown at Fig. 61. The following observations are valuable in this connection: In order to produce good work, two things are essentially necessary in the mixing of distemper — namely, clean and well-washed whiting and pure jellied size. The whiting should be put to soak in sufficient soft water to cover it well and penetrate its bulk. When the whiting is sufficiently soaked, the water should be poured off, which will remove any dust or foreign matter from the whiting. It should then be beaten up or stirred until all the lumps are broken and it becomes a stiff smooth paste. A good workman will do this

with the hand, and will manipulate it until it is quite smooth; but it may be done most effectually with a broad stick or spatula, and then strained through a metal or other strainer. The size should now be added, and the two lightly but effectually mixed together. Care should be taken not to break the jelly of the size any more than can be avoided, and this may be best done by gently stirring the mixture with the hand. If the jellied state is retained intact, the colour will work cool, and lay on smooth and level. The size, whether made of parchment clippings, glue, or any other material, should be dissolved in a sufficient quantity of water to form a weak

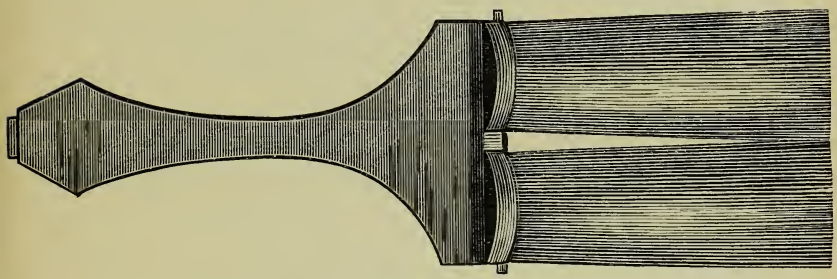


FIG. 61.—Distempering Brush.

jelly when cold. In practice we find that distemper mixed with jellied size will lay on better and make a better job than when the size is used hot. Colour mixed on the former plan works cool and floats nicely, while the latter works dry, and drags and gathers, thus making a rough ceiling or wall, and the difference in the labour required is very much in favour of the jellied size. A little alum added to the distemper has a good effect in hardening, and helps it to dry out solid and even.

Mixing Distemper Colours.—I will now briefly glance at the combinations of the various pigments which will furnish

the tints most required by the distemper painter. It is to be understood that the pigment forming each combination requires to be mixed with size as a binder, and that the colour should be subsequently passed through a strainer.

White.—The best whiting only.

Light Grey.—The same with the admixture of some lamp black. This may be so proportioned as to give any shade of grey.

French, or Silver Grey.—Soak sufficient whiting in water, then add Prussian blue and lake, which have been finely ground in water, until the desired tint is obtained. This is a delicate and effective colour.

Buff.—Whiting and yellow ochre, dissolved separately in water. A little Venetian red added will produce a warmer buff.

Drab.—Whiting, with a little burnt umber, ground fine in water.

Salmon Colour.—Whiting, the solution being tinged with good English Venetian red.

Orange. — Whiting and French yellow.

Lilac.—Indigo, finely ground in water and added to the whiting; rose pink is then to be added to the mixture.

Pink.—Whiting and rose pink, dissolved in water separately, then mixed to the shade required.

MARBLING.—*Nature of Marble.*—Marbling is an operation precisely analogous to graining, in that it is an imitation of an actual material by the medium of paint. It is obvious that in this case, as in the former, the first thing which the imitator has to do is to become as familiar as possible with the thing to be imitated. Many decorators are, however, content to satisfy themselves by a casual glance at such specimens of painted marble as they may chance to meet. Others procure patterns of the same kind from marblers who supply them, and copy them. Either plan is eminently absurd. In most

cases the painter merely imitates the copy of a copy of a copy —nay, there may have been a score or even a hundred copies since the first authentic drawing was made. It is as reasonable to suppose that a decent bit of marble can be executed in this way as to imagine that a portrait could be painted without the artist having seen the original. But, it may be objected, actual specimens of marble are not easily to be found. This must be granted. Still, to use the words of the old proverb, "All things come round to he who can but wait," and I strenuously advise the painter to wait, and to register an unalterable resolution that he will imitate no marble that he has not actually seen — that he will under no circumstances condescend to become the servile copyist of another. Of course, opportunities for examining real marbles vary according to the locality where a man resides. In a country town or village they will be very hard to come at. In a city or large town opportunities will be more frequent. In the metropolis, whether the painter be a resident or only an occasional visitor, columns of such marbles as Sienna, Verde Antico, and Rosso Antico may be frequently met with in the windows of the shops of dealers in old furniture, antiquities, and curiosities. The same may be said of malachite. Scagliola is merely an artificial marble, although it used to be employed, and should therefore never be imitated. There is a respectable collection of specimens of various marbles in the Museum of Economic Geology at Jermyn Street, which is open free to the public, and which the painter should by all means look at. When the painter sees a useful specimen he should make a pencil drawing of it in his sketch-book, and carefully pencil it down, and then colour it in water colours according to nature at his leisure. By making a habit of this, the young decorator will in process of time accumulate a good stock of natural and reliable patterns. In speaking of painting, I advised the painter to make himself so far acquainted with the physiology

of plants as to understand to some degree the nature of the vessels which form the grain of wood. The same advice may be proffered in regard to marbles. A short peep into some good manual of mineralogy or geology will teach him much concerning the nature and structure of the rocks which he desires to imitate. The marbles are fundamentally and essentially limestone, but coloured throughout their entire bulk, or by venation or striation, by foreign matters, principally the metallic oxides. The nature and peculiarities of the veins demand consideration. The simplest of the veined marbles, Cipolino, or white veined marble, yields us some valuable hints as to the nature of veins. When a slab of marble is quarried, and also when it is what a timber merchant would term "converted," that is, sawn up into slab, in either case the marble is got out or sawn up, so that the veins run longitudinally along it. This is absolutely indispensable to bring out its beauties, for if it were worked transversely to the veins it is evident that the extremities of the severed veins would only show as black spots,—in the same manner as if a tree trunk were sawn transversely across, it would only display the ends of the several vessels, and not that entire varied longitudinal course of the vessels which form the grain. But there is something else. In Cipolino the ground is white, and the veins black or grey. This falls out thus: When the block is sawn into slabs, the saw may pass exactly along the course of a vein or at some distance on either side. The former vein, being upon the surface, will appear black and well defined; the latter will be greyish and indefinite, because seen through a more or less thick stratum of the translucent marble, or be wholly invisible. This is exemplified at Fig. 62, representing a section longitudinally through a slab of Cipolino. The vein 1, being at or very near the surface, will be black; the vein 2, lying below the surface, will be grey; and those at 3 and 4, lying below the dotted line, will be

invisible. This is an important point for the marbler to bear in mind in order to secure natural vraisemblance. The manner in which the streams of coloured oxides have penetrated the sandstone block to form the veins may be illustrated roughly but usefully by placing a pane of glass upon a table or bench and slightly elevating one end by putting some small object under it. Let a small quantity of water be then poured on the elevated end of it. It will begin to run slowly down in streams. After these have descended the slope a little distance they will bifurcate, or split into two or more smaller streams. These will in their turn subdivide, so that, at last, what was one stream at the top end of the pane will have

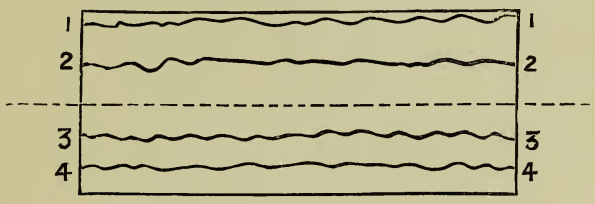


FIG. 62.—Venation of Cipolino.

split into several by the time the bottom of the glass is reached. This is precisely what we observe in the venation of marble. Consequently, if the decorator be painting white veined marble, let him imitate this. But he must imitate it naturally. If he has commenced at one side of his panel with a single vein, and has judiciously split it into several by the time it reaches the bottom, he must not reverse the operation with the next vein, and, beginning with one at the bottom, end it at the top with many ramifications, because this is never seen in nature. Fig. 63 will illustrate what is meant by bifurcation.

Pentelic Marble. — This beautiful limestone is the finest possible marble both for glyptic and architectural purposes.

It was from the quarries of Pentelicus that the material was procured with which Iklinos, *circa* 455 B.C., erected near the Acropolis of ancient Athens that magnificent temple to the virgin goddess Pallas Athené, the tutelary deity of Athens, which we call the Parthenon. And the beautiful and unrivalled statuary, most of it from the marvellous chisel of Phidias and his scholars (and many of which are in the galleries of our British Museum), was also executed in the same

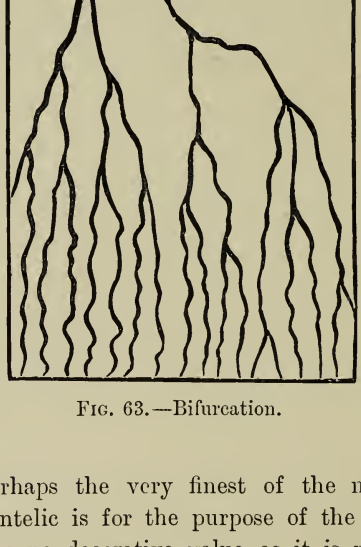


FIG. 63.—Bifurcation.

limestone — perhaps the very finest of the marbles. But, excellent as pentelic is for the purpose of the sculptor or the architect, it has no decorative value, as it is not veined, and hence the decorator never imitates it.

Cipolino. — The fine marble known by its Italian name (pronounced *Cheepoleeno*) in artistic circles is generally termed white veined marble by the English mason and decorator, and sometimes black and white marble. The veins are, as I have

mentioned, black and grey. The latter can be put in while the ground is wet, and carefully blended. The black are painted in with a pencil when the work is quite dry. Some decorators put in the grey veins with a marbling crayon while the ground is wet, and carefully blend and soften them.

Italian Marble.—This is a bold effective variety, well suited for columns and pilasters which divide panels from each other. The ground, or rather principal colour, is buff. This may be made of white lead and Oxford ochre, with just a suspicion of vermilion, well ground in boiled oil. In another pot should be prepared some burnt sienna ground fine in boiled oil. Each pot will require a separate brush. The buff brush is then taken, and the colour dabbed freely on the work at irregular intervals and in irregularly shaped patches. The more these differ from each other both in shape and size the better. Next take the burnt sienna brush and lay this colour in the spaces intervening between the buff. Then, while the surface is still wet, take the badger's-hair softener and blend the edges together as delicately as possible until the entire surface of the work is covered. When the work is dry draw a few fine veins with a camel-hair pencil in pure white, and a few of the same kind intersecting them with the burnt sienna and soften them with the softener.

Sienna Marble.—This is the finest of the Italian yellow marbles, and has always been a favourite with architects, and is therefore very commonly imitated. Irregular veins and varied patches characterise this marble. The ground may be of Oxford ochre and white lead. For the marbling, burnt sienna, white, and black are employed. These should be laid on as glazing colours, and carefully blended so as to imitate an actual specimen of the marble.

Verd' Antique Marble.—This is a fine green Italian marble, with veins and patches of black and white. Almost every marbler has his own peculiar "fad" about a process of imi-

tating this marble. The following plan is simple and easy, and as effective as any other: Lay on white over the surface in large bold streaks with a good-sized tool. Then with another tool fill up the interspaces with a black composed of vegetable or lamp black finely ground in ale, until the whole of the surface is covered. Soften while wet. With a pencil charged with white the painter then makes a series of careless dabs of different sizes and forms to represent the shells and other fossils found plentifully in this marble. Then with another pencil, dipped in black, similar marks are made upon the light portions of the work. Then a very thin grainer divided with a comb is dipped in the white and drawn over the black parts to form small irregular veins. A feather answers for this part of the work admirably. A few dark blue veins should be drawn across the work in a zigzag direction diagonally. When the work is quite dry it should be glazed with Prussian blue and raw sienna ground in turps, and mixed with copal.

Malachite.—This fine marble, deeply coloured by sulphate of copper, has only come into use during the last few years. It is found principally in Russia, where it is much employed. The ground should be of dark green, with irregular black markings, which must be imitated from an actual specimen.

Porphyry Marble.—This is a spotted marble. The spotting is obtained by sprinkling in much the same manner as the bookbinder "sprinkles" the edges of half-bound books. The ground should be of a brownish pink. The sprinkling colour may be white lead and vermilion. These should be ground separately in turps, and a small quantity of gold size added. A large brush is then dipped in this, and most of the colour pressed out either against the side of the pot or on the edge of a palette knife. An iron rod or a short stout stick is then held in the left hand, and the brush beaten smartly on this so as to throw down a shower of fine spots. This should be first tried on a piece of paper to ascertain whether the spots are

fine enough, and then on to the work. When it has all been gone over, some more white lead is mixed with the colour and the work again sprinkled. Finally, it is sprinkled again with white only. Some marblers use a small apparatus called a graniting machine for performing this operation.

Granites.—This variegated rock—for it is not a marble—is a good deal employed in modern architecture, and hence often imitated. There is great variety in the colours of granite. Some are mainly grey, others pink or salmon colour. The grey ground should be sprinkled with black and white spots, thrown on by sprinkling. The salmon ground has black, white, and vermilion spots, similarly applied. The decorator should consult actual specimens of granite. The preceding instructions give a general idea of the methods used to imitate a few of the more common marbles. For others the learner should consult actual specimens, and imitate them by the means that appear the most simple and effective.

CHAPTER XIV

SIGN PAINTING

THE ALPHABET.—The alphabet, of about twenty or two dozen letters, in use in all European countries save Russia, is supposed to have been originally derived from Phœnician sources. From Tyre and Sidon it made its way (slightly changed in form) to Greece, and from the latter country (again altered in the shape of the characters) to Rome. Substantially, the capital letters which we use to-day were those used by the latter great nation, and hence we term them "Roman." Not, however, that our own ancestors used that form of letter. On the contrary, they employed an alphabet of letters of much heavier kind, known as the "Gothic," and akin to that used in the Germany and Scandinavia of the present day. We find this description of character not only in the ancient manuscripts, but also in our earliest English printed books, as those from the presses of Caxton and Wynkyn de Worde. This form of letter is the one most in use by the painter, who, as a general rule, only employs the capitals and the figures, as shown at Fig. 64. The example here adduced may be taken as a fair specimen of the proportions of ordinary Roman letters. But both the painter and the typefounder occasionally vary it both in the matter of breadth and height. Of course, any variation of this nature is carried through the entire alphabet. Thus, Fig. 65 represents a Roman kind where the letters are narrowed or squeezed up. This variety,

which the typefounders and printers term condensed, is occasionally handy where it is required to get more letters or words in a line. Contrariwise to the foregoing, the letters may

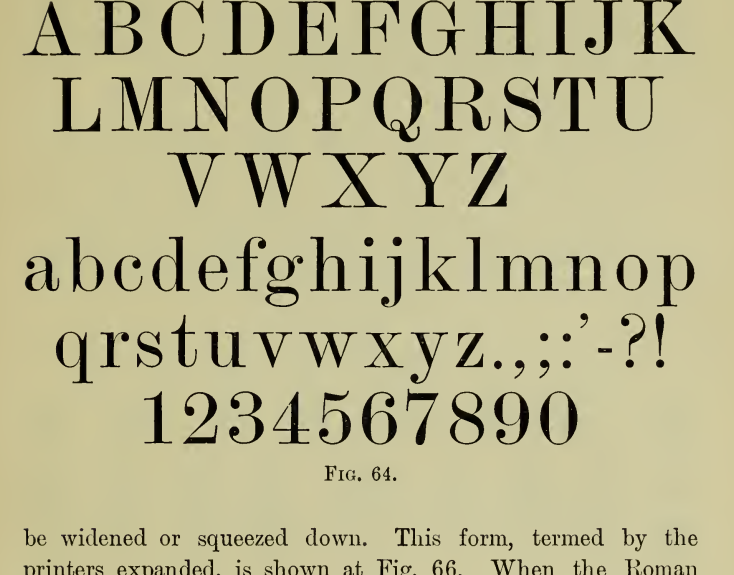


FIG. 64.

be widened or squeezed down. This form, termed by the printers expanded, is shown at Fig. 66. When the Roman letters have a slightly inclined form given them in the capitals,

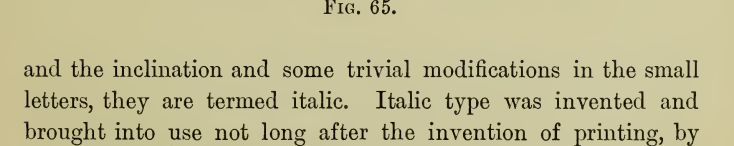


FIG. 65.

and the inclination and some trivial modifications in the small letters, they are termed italic. Italic type was invented and brought into use not long after the invention of printing, by Aldus Manutius, the celebrated Venetian printer, who produced

several books set entirely in that type. Fig. 67 shows the italic capitals. When figures are required with it, as a rule the ordinary upright ones are employed. A kind of character, essentially Roman in itself, but much bolder, and very useful

A B C D E F G H I J K L M N O P
Q R S T U V W X Y Z

FIG. 66.

A B C D E F G H I J K L
M N O P Q R S T U V W
X Y Z

FIG. 67.

A B C D E F G H
I J K L M N O P Q
R S T U V W X Y Z

FIG. 68.

A B C D E F G H I J K L M N O P
Q R S T U V W X Y Z

FIG. 69.

for some purposes, is shown at Fig. 68. This is generally known by the somewhat fanciful name of "Egyptian." A yet more useful kind of letter, and one remarkably easy of execution, is that shown in Fig. 69. This differs essentially from

Roman, not so much from its bold, heavy nature, as from the fact that the small horizontal strokes—such, for instance, as are seen at the top and bottom of a capital I—are altogether absent. These strokes are called "serifs" by the typefounder, and hence they term the character shown at Fig. 69 sanserif, from the French word *sans*, "without," as these letters are without

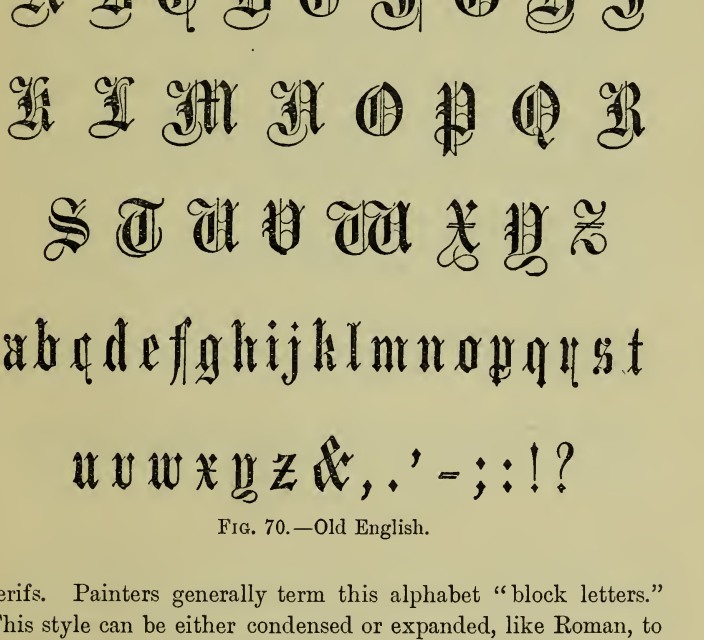


FIG. 70.—Old English.

serifs. Painters generally term this alphabet "block letters." This style can be either condensed or expanded, like Roman, to suit the space which the lettering is to occupy. The ordinary writing alphabet is considerably used in some situations: for example, in a fascia bearing the inscription, "Jones, Chemist and Druggist," it is very usual to place "Jones" in the centre in block letters, and one of the trade terms on each side in the

usual script or penmanship character. When this is done in gold, and carefully shaded, the effect is very good. All the preceding styles, being essentially very simple, any careful man can easily perfect himself in with a little diligent practice. It is somewhat otherwise with the succeeding two examples, which, being rather more ornate in style, will require more care to master perfectly. The first and easiest is that termed generally Old English, but which the printers call Black. This

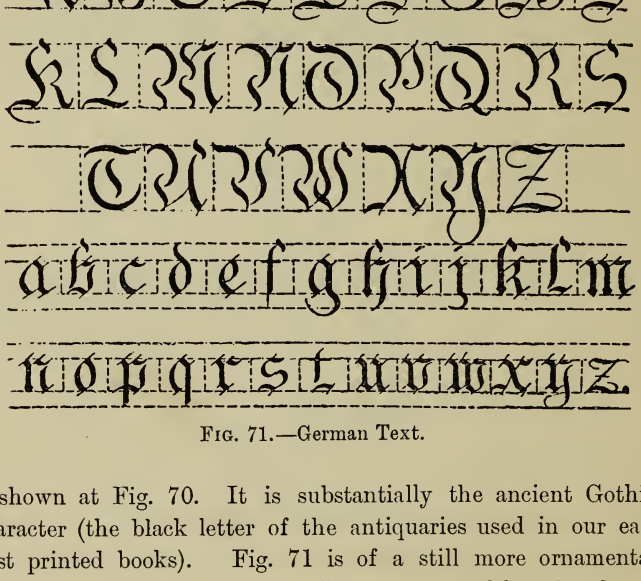


FIG. 71.—German Text.

is shown at Fig. 70. It is substantially the ancient Gothic character (the black letter of the antiquaries used in our earliest printed books). Fig. 71 is of a still more ornamental character, generally known as German text, although why it should be so termed is not clear, as it is not the heavy character which the modern Germans use in their printed books, although it somewhat resembles it. Both the two last-cited styles are much used on the signboards and other lettering of

inns and public-houses, and can only be satisfactorily executed by a good workman. A peculiar upright current hand, used by lawyers in writing wills and other legal instruments, is sometimes useful. It is illustrated at Fig. 72. It is termed engrossing hand, the word being derived from the Norman French, and having reference to the fat appearance of such writing. Of the innumerable varieties of ornamental letters, space will not, of course, permit me to say anything. They

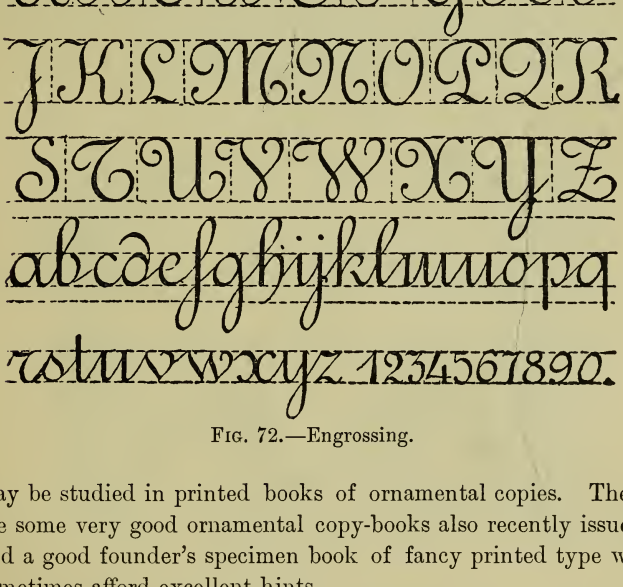


FIG. 72.—Engrossing.

may be studied in printed books of ornamental copies. There are some very good ornamental copy-books also recently issued, and a good founder's specimen book of fancy printed type will sometimes afford excellent hints.

Shading.—Almost any kind of letters can be shaded, or provided with a shadow on one side, to the advantage of its appearance. This is more especially the case with gilt letters. Sometimes the shading is double or graduated, being darkest

next the letter, and gradually tapering off to a lighter tint. The shading is always applied to that side of the letter towards the spectator's right hand. Indeed, this rule is universal in all kinds of drawing and painting, the theoretical rule being that the light always falls from the top left hand. The opposite of shading is the application of what writers call a "thickness." This is an addition of some light colour on the side of the letter opposite the painter's or spectator's left hand, which gives the letter the effect of being raised above the

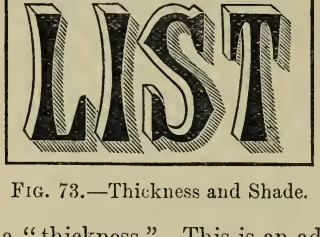
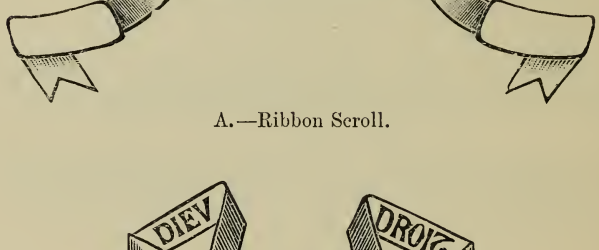
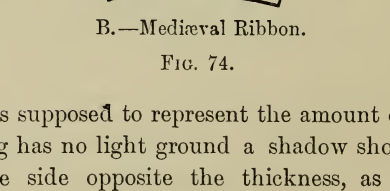


FIG. 73.—Thickness and Shade.



A.—Ribbon Scroll.

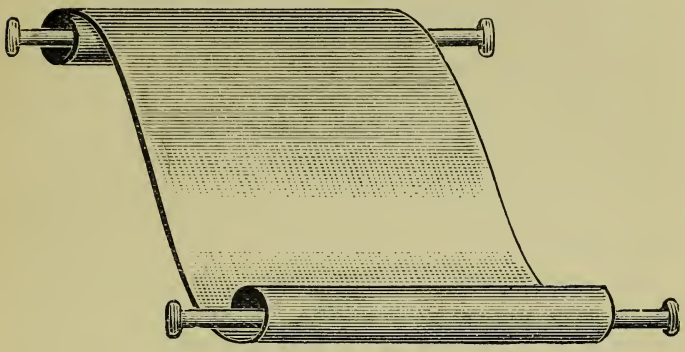


B.—Mediæval Ribbon.

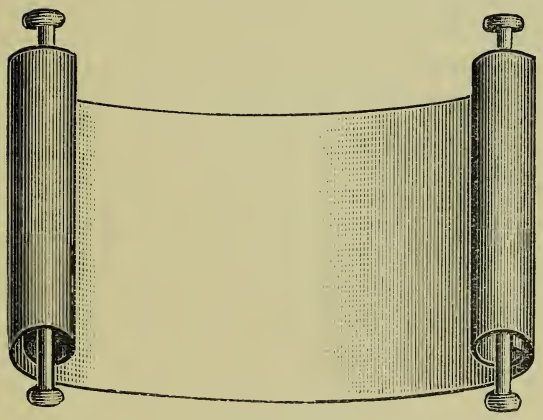
FIG. 74.

ground, and is supposed to represent the amount of such relief. If the writing has no light ground a shadow should always be added on the side opposite the thickness, as illustrated at Fig. 73.

Flourishes.—It is necessary that the decorator should also perfect himself in the art of making good and efficient flourishes.



C.—Open Scroll.



D.—Rolled Scroll.

FIG. 75.

This is especially necessary for pieces in which German text, Old English, or other ornamental characters are employed,

The ancient writing masters greatly prided themselves upon their skill in "flourishing," but in these days of printed headed copy-books the art may be considered as lost, so far as ordinary penmanship is concerned. It is but seldom that one sees any novelty in lettering, but, during the last dozen or so years, a very effective and striking modification of block letters has arisen, and been much in use. These letters, by the aid of careful shading, are made to appear convex or concave in the direction of their height, and, when well done, look as if they were cut out of thin metal, curved, and cemented on the fascia.

Punctuation. — The writer should always remember in painting up a name to put a full stop, or period, after the initial or initials, thus—W. J. Hunt, and not, as is very often done, a comma, so—W, J, Hunt. He should also be very careful to spell all words correctly, a small matter sometimes shamefully disregarded. In some kinds of ornamental lettering, considerable use is made of ribbons and scrolls, and in some cases these are very effective. Thus, in Fig. 74, A shows an ordinary, old-fashioned, three-fold ribbon. This kind of ribbon may be modified *ad libitum*. Of late years, since the Gothic revival in structures and ornament ecclesiastical, the old square formal ribbon of the Mediæval period has become popular. It is shown at B, in Fig. 74. This is the only kind suitable for ecclesiastical work. Where an inscription is desired to show conspicuously, in such a position as on the plastered wall of the corner of a house, placing it in a scroll will often aid in throwing it up, such as that shown at C (Fig. 75), which is a common and very effective form of scroll. Fig. 75, D, on the preceding page, is a vertical scroll, which is effective if carefully executed. This is the form of the *volumen*, or old Roman book, and also of the Hebrew rolls of the *Torah*, or law, as kept in the Jewish Synagogue, and read to the congregation on the Hebrew Sabbath.

CHAPTER XV

INTERNAL DECORATION

I MUST here add to my preceding remarks on distempering that the workman uses the large flat brush illustrated, and lays on his colour as evenly and smoothly as possible, but at the same time with all possible expedition. He should close all the doors and windows of the place in which he may be working before beginning, and keep them so while he is laying on the colour. Directly, however, he has covered all the surfaces which he has to distemper, the doors and windows should be thrown open, and as free a circulation of air as possible should be secured. The greatest care should be taken to lay the colour on everywhere alike, as, if this is not properly regarded, the surface when dry will not be all of one tint. It is also necessary to be as careful as possible to avoid the joinings showing. This is best secured by laying on the fresh portion of work before that which it joins is quite dry.

Whitewashing.—The immediately preceding remarks, and those in a former chapter, bear so much on this subject as to preclude any lengthened remarks upon it. Ceilings are almost universally whitewashed periodically with a distemper of whiting, size, and water, applied with a broad distempering brush. As a general rule, the ceiling should be well washed over previously with a brush and clean water. Where ceilings are badly discoloured from water or any other moisture percolating through, it will be safest to wash these well off, and apply two

coats of oil-colour before they are whitewashed. In the United States various preparations of calcined lime, gypsum, etc., are sometimes used in lieu of whiting, under the fanciful names of kalsomine, calcimine, etc., but none of them appear to be any improvement upon the old plan.

Internal Decoration.—As a general rule, in the ordinary dwelling-houses inhabited by the middle classes, the internal woodwork is painted, the ceilings whitewashed, and the walls covered with paper. Occasionally, but rarely, the walls are done in distemper colours, some people believing, probably with reason, that such walls are more conducive to health than papered ones, and others admiring the cool, quiet effects of distempered surfaces when properly executed. The paperhangings vary much in quality and excellence, according to the style of the house and the pretensions of its occupiers, ranging up to the splendid Lincrusta-Walton, so called. In superior houses, of higher class, the ceilings are frequently coved, and carefully decorated in colours, and the walls painted in oil, generally flatted.

Paperhanging.—The paperstainers now produce wall hangings of great excellence and beauty, and at remarkably low prices. The affixing of these to the walls comes within the province of the painter and decorator. The cementing agent employed is good paste of wheaten flour, thus prepared: Beat up two pounds of white flour into a stiffish paste with cold water. Use a good spatula to crush out all lumps, and then add one and a half ounces of powdered alum. This done, pour on the mixture about two gallons of boiling water, stirring the batter round from left to right continually while the water is being gradually poured in from the kettle. If the water is boiling, and the batter is effectually stirred whilst this is added, at first slowly, and then rapidly as the paste thickens, which it will soon proceed to do, the result ought to be a bucket of good paste, quite free from lumps, and strongly adhesive. It is well, after the

paste is made, to pour on the top a pint of cold water. Some people assert that the alum keeps the paste from moulding so rapidly. However this may be, it is certain that the strongly astringent properties of that alkali tend greatly to obviate wrinkles, especially in thin papers, which are most liable to show them. The alum also helps the paste to thicken, and is probably preservative in hot weather. But it is not advisable to use alum in paste which is intended to fix gold papers, for alum has a tendency to discolour and turn black all papers which have a metallic lustre. The object of pouring cold water upon the newly made paste is to prevent a skin forming over it. To prevent the often sickening odour that pervades a newly papered room for some time, add to the paste a little oil of cloves, salicylic or carbolic acid. These things are cheap, and further, are sure remedies for the nauseous and unhealthy odour of sour paste. The paperhanger requires a temporary bench in the room in which he is working, upon which to paste his paper. This is generally of light boards, supported by trestles. The paperhanging has a raw edge on each side over which the pattern is not continued. When the paperer has cut off a length from a piece of sufficient length to extend from the ceiling to the top of the skirting board, he cuts off one of the selvedges close to the pattern and accurately straight. This straight edge should be the one away from the window on the side walls, as otherwise the light falling upon it will reveal a palpable and unpleasant joint. Of course the lengths must be so cut that the pattern will everywhere accurately correspond, and the end of the paper at the top must be cut squarely across at right angles to its straight side, and with great correctness. For all the cutting a pair of long-bladed scissors, shown at Fig. 76, are employed. The length of paper is now carefully pasted over, taking care that all the surface is covered, but not overloaded, with paste. Some decorators employ a round brush, like a painter's rounding brush, for this purpose; others prefer

a flat, double-tied one, such as is used in distempering. The pasted length is now doubled up with ends together at one or two places, so that the workman may carry it easily without draggling, and its straight-cut top edge applied accurately to the wall just under the ceiling or moulding. The lower part is then also unfolded, and also put to the wall. The operator then everywhere secures its adhesion by pressing it carefully to the wall. As the damp paper is very apt to stretch, which would spoil the pattern and cause wrinkles, the paperhanger needs to handle it with great tenderness and caution, and the "knack" needed can only be taught by practice. In pressing down the paper on the wall, it must be borne in mind that, in order to get rid of air bubbles and wrinkles, the operator should

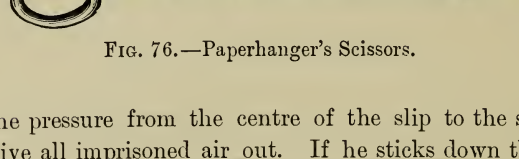


FIG. 76.—Paperhanger's Scissors.

apply the pressure from the centre of the slip to the sides, so as to drive all imprisoned air out. If he sticks down the sides firmly first, he will experience difficulty in making the central part properly adhere. In this process only the hand and a cloth used to be employed, but at the present day paperhangers have the aid of a roller made on purpose, shown at Fig. 77, which is of boxwood, covered with thick flannel, and then an outer skin of leather, not unlike the roller of the lithographic printer, and is mounted in an iron carriage provided with a wooden handle. This is rolled over the paper, and quickly procures adhesion to the wall. Great cleanliness should be observed by the paperhanger, as a little paste or other moisture on the right side of the paper may seriously injure the pattern. Nothing need be said of the selection of the patterns, as these

are generally chosen by the customer; but it is well that the decorator should advise his patrons on no account to choose bizarre or outré patterns for bedrooms. Sickness is generally sooner or later the occasional lot of all, and many a fretful and feverish patient has found his or her mind worked up to a perfect agony of misery by following the lines of some diabolical pattern, which suggests rows of crushed blackbeetles, or in the outlines of which he can form a ghastly or demoniac face. There are, we regret to say, too many such designs. We do not, for one moment, suppose their inventors produced them

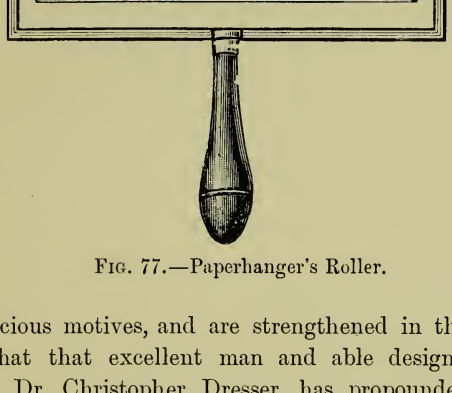


FIG. 77.—Paperhanger's Roller.

from malicious motives, and are strengthened in that view by finding that that excellent man and able designer and art authority, Dr. Christopher Dresser, has propounded, in some of his capital works, some designs of a decidedly unpleasing character. His motives and explanations are excellent, but his *motifs* are not to be commended. Hanging heavy flock papers requires considerable care, and it is well to give the walls a preparatory coat of size to aid the adhesive power of the paste in affixing them firmly. It is scarcely possible to cut off the length so accurately that it will end nicely flush to the skirting board; so, if it does not, the hanger cuts it to the proper length

and straight across with his scissors, and then presses it to the wall. In the preceding remarks we have in view the ordinary style of paperhanging, in which a regular repeat pattern runs from ceiling to floor all around the room. But for houses of rather superior pretensions this style has been almost superseded of late years by the revival of an older fashion under a fresh form. The earlier houses of our ancestors were entirely of wood, to which the Normans added palaces and castles of stone. When, however, brick building came in with the Renaissance primarily, and secondarily used in a more pronounced fashion with the advent of the hook-nosed Dutchman, who superseded the Stuarts, people still adhered to their old liking for woodwork, and lined their rooms with panelling, generally of oak. This, at first, covered the whole wall, but after a time it was only continued up shoulder-high, and the plastered wall above was distempered. Later on still, the panelling, generally known as "wainscot," from the Dutch word "wagenschott," oak (much of that timber then coming from Holland), was still further reduced to the height of about three feet from the floor. This was the origin of the dado, now reproduced in wall papers. The word dado itself is Italian, and means a die, or anything square like a die, its original architectural application being to the plinth or pedestal of a column, which is generally square. The classic term frieze has always been applied to an ornamental band around a building or room. For example, in the Elgin Room at the British Museum we find that matchless collection of bas-reliefs, the work of Phidias and his scholars, which formed the frieze around the grand temple at Athens, erected between 454 and 438 B.C. The modern style of dividing the wall decorations of a room, whether of painting or paperhangings, into frieze, filling-in, and dado, is unquestionably a great æsthetic improvement on the old universal repeat patterns covering the whole wall. As applied to modern paperhangings, divisions of the wall surface into three parts is indicated in the

sketch at Fig. 78, where A is the frieze, B the dado, and C the intervening papered space, the paper for which is known as the "filling-in." Friezes and dados can be had in many different widths, and it requires judgment in selecting to properly apportion the breadths of the two, remembering that in all cases the dado should be wider than the frieze, or the effect cannot be otherwise than bad. There are other matters to be attended to in choosing these, which, to judge by the atrocities which we often meet with in dark rooms, decorators too frequently ignore, or, while permitting their customers to make their own ignorant selection, let them ignore. For example, we may come across the wall of a room decorated in the following style: Above the floor we find a deep dado representing an effect of blue sky and light fleecy clouds, across which fly brilliantly coloured tropical birds, or perhaps butterflies. Above this comes the filling-in of a much darker ground bearing

FIG. 78.—Portion of Wall.

large sunflowers, the whole being surmounted by a frieze, the ground colour of which is a deepish green to represent sea-water, which is filled by algæ or other marine plants of dark olive, and peopled by fishes and other sea monsters of various tints of olive and brown swimming about amidst the vegetation. And such is held to be æsthetic, good taste, and culture! Ye gods, defend us. Not the most realistic old stencilled distemper wall with cabbage roses as big as soup-tureens and bunches of Hambro' grapes as gigantic as those which the spies bore back to Moses from Canaan, are so unutterably vile as this. In the first place, every canon of true decorative art teaches us that a wall should be darkest next the floor, and should lighten as height is gained, until its last and lightest tones insensibly merge into the pure white of the ceiling. Yet here we find the dado lightest and the frieze darkest of the wall. Then is it not obvious that good taste demands that the aërial effect should be in the highest place, and the dark mauve *motifs* find a place in the dado? I mention this to impress upon the decorator the importance of cultivating good taste in order that he himself may make sensible selections, or give judicious advice to his patrons when he finds them bent upon choosing patterns utterly ridiculous, of which, I am sorry to say, the designers appear to be capable of perpetrating any amount.

Painted Walls. — In many good houses, and especially in buildings of public resort, as theatre vestibules, public halls, hotels, etc., paint is very generally preferred to either distemper painting or paperhangings as a wall decoration. It is of course more expensive than either, but on the other hand it is more healthy than one, and more durable than either. The remarks which we have made on the painting of external walls apply equally to internal ones. A principal point on plastered surfaces is to apply sufficient preparatory coats to quite kill the "suction" of the wall before the finishing coat is laid on. The stopping and other preparatory processes

are of course the same for internal as for external work. On plaster four or five coats of paint are generally necessary, commencing with the "priming," which, as in outdoor work, is generally composed of a mixture of white and red lead, with linseed oil, and a small proportion of patent driers as a siccative. It is not well to add more than one part of turps to three of oil for the priming and second coats, but a larger admixture is generally made with the finishing colours. In the third painting, the colour may be "stained" with some relation to the finishing colour. If the finishing coat is to be a dark one, the third coat may be of a slate colour instead of the drab of the priming. When the third coat is dry, the wall should present a fairly uniform appearance. If, however, certain patches indicate that the colour has been absorbed at those places, they must be gone over again in order to ensure a uniform surface for the reception of the finishing coat. Many decorators lay on a colour of coats of the finishing colour, which is no doubt an excellent practice. If it is intended that the finishing coat should be flatted, the fourth coat immediately preceding it should be as "round" as it can be not to look streaky. It should be mixed with equal parts of oil and turps, and stained to a tint rather darker than is decided upon for the finishing coat. All the coats should be applied very smoothly, and each be gone over with fine glass-paper before the next is applied. With regard to the colours to be used, that of course depends upon the taste or fancy of the customer or decorator. In all cases care should be taken that the combinations are harmonious. The system of painting internal walls in a parti-coloured arrangement representing either a dado and upper surface, or a dado, frieze, and filling-in surface, is very popular at the present time, and when well done is very effective. Dadoes and friezes should be bordered.

Borders.—A border may consist of a single, double, or

triplicate line, or of some narrow band of an ornamental kind, according to the circumstances. Lines should be executed with the greatest care both as to straightness and to an equal width all along its course. Different painters prefer different brushes for this purpose. Some use the camel's hair or sable writing pencils, which are excellent, but the hairs being very long are somewhat difficult to manipulate when charged with colour. All these come to a sharp point. Other decorators prefer a

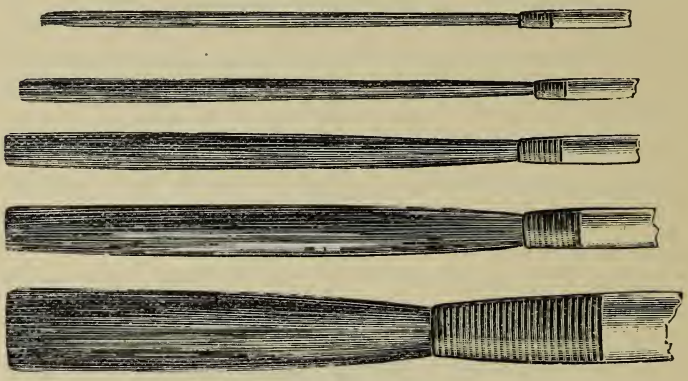


FIG. 79.—Sable Liners.

pencil the end of which is square, as the sable liners, shown at Fig. 79, or the camel's-hair liners, illustrated at Fig. 80, with both of which good work can be done. Still other painters adopt the oblique-ended hog's-hair lining tool, shown at Fig. 81, which is perhaps the easiest brush to handle for general lining. More elaborate than simple line borders, but still very easy and quick of execution, are repeat borders formed of one simple form as many times repeated as may be necessary, some varieties of which are shown at Figure 82. A degree more elaborate, but still

easy, are the patterns shown at Fig. 83. A form of ornament always very popular as a dado border is some kind of fret, variations of which will be noticed under stencils.

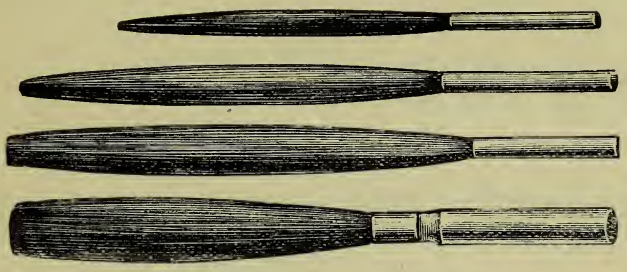


FIG. 80.—Camel-hair Liners or Stripers.

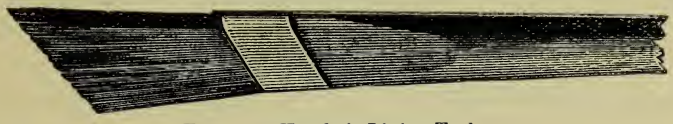


FIG. 81.—Hog-hair Lining Tool.

FIG. 82.—Borders.

Stencils.—Obtaining patterns by rubbing some colouring matter through the interstices of a perforated plate is a very ancient practice, and was probably known to both the ancient Egyptians and to the two great classic nations.

We are told by history that a certain early monarch affixed his signature to his decrees by the aid of a stencil plate, through which he traced the characters which formed his name. Before the epoch of cheap paperhangings, white-washed and distemper-coloured walls were frequently

FIG. 83.—Borders.

covered with simple patterns by the aid of stencilling. But when the paperstainers improved their wares, and greatly reduced their prices, distemper stencilling became quite obsolete. It has, however, been revived in our own day as a means of decorating painted surfaces, with excellent

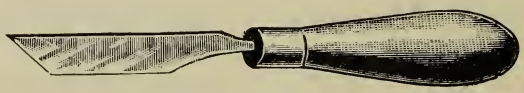


FIG. 84.—Cutting-out Knife.

effect. It used to be considered necessary that stencil plates should be of thin sheet copper, zinc, or other metal, but now they are generally cut in paper. The pattern is designed on a proper-sized piece of stout cartridge paper or other substantial paper or thin cardboard, and cut out with a

keen-pointed knife, generally of the shape shown at Fig. 84. Stencil cutters vary in a choice of a substance to cut upon. Some use a smoothly planed bit of pear tree or cypress, others a smooth, hard mill-board, others a bit of sheet lead, still others a piece of plate-glass. The last substance admits of the edges being kept very sharp and clean, but speedily blunts the knife. In cutting, care must be taken to leave sufficient portions of the paper, termed "ties," to hold the pattern together properly, as shown at Fig. 85. It is usual to brush the pattern over with a little patent knotting, or something analogous, to preserve it. The ties are painted out after the design is finished.

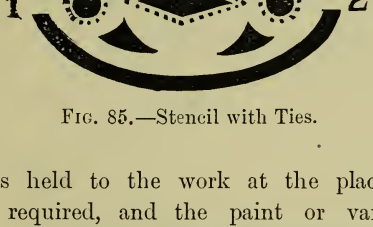


FIG. 85.—Stencil with Ties.

The stencil is held to the work at the places where the ornament is required, and the paint or varnish brushed through it. Care must, of course, be taken to hold it so tightly that it cannot shift.

Ornaments.—A great variety of separate ornamental *motifs* can be drawn from any good work on ornamental art, which will prove of great service to the decorator for many ornamental purposes — as, for instance, powderings to fill up a panel, etc. Of these, such subjects as stars, crosses, the Greek *anthericium*, or honeysuckle, the French *fleur-de-lis*, etc., may be instanced.

Corners.—When lines are employed to emphasise a panel, pilaster, etc., they may either meet and form a right angle

at the corners, or, which is to be preferred, have an ornamental corner to terminate the sides by a scroll, as shown at Fig. 86. The corner may be placed either outside or inside the border, as shown.

Frets.—That simple but effective ornamental form known under this name is excellent for a border or for other line work. Frets are a form of ornament of the highest antiquity. The common, simple one, sometimes termed

FIG. 86.—Corners.

the key pattern, is generally termed the Etruscan fret, because it was used by that strange race which inhabited Etruria, in Northern Italy, before Romulus and Remus were suckled by the wolf. The Greeks and Romans subsequently adopted and improved on this, forming double frets and other yet more complicated forms. All frets are easy to design. It is merely necessary to cover the ground with a series of equal squares, and select certain

of them to form the design, as shown at Fig. 87, which exemplifies the process as applied to the simple fret, but the most complex can be produced in the same manner.

Pattern Designing. — The mention of the designing of frets naturally leads to the question of the designing of all kinds of decorative patterns as required by the house painter. This question is, of course, one of far too extensive a character for discussion within these narrow limits. We can only say that every ambitious decorator will strive to make himself acquainted to some degree with the principles of it. This will involve a more or less

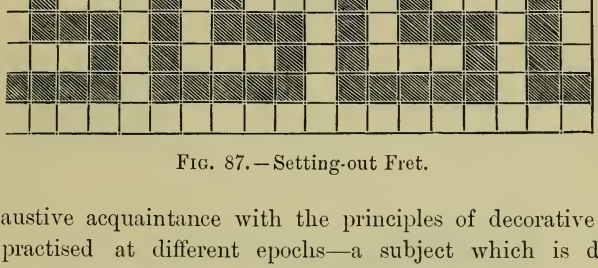


FIG. 87. — Setting-out Fret.

exhaustive acquaintance with the principles of decorative art as practised at different epochs—a subject which is dealt with by the writer in a companion volume to this.

Varnish and Varnishing. — Varnish is often applied both to painted and distempered surfaces in order to protect them from the weather, etc. The essential ingredients of most varnishes are various foreign gums and lacs (of which gum copal is the best and most important) dissolved in alcohol, oil, and other media. These are applied either with round brushes of hog's hair, bound with tin or copper wire, as at 1 and 2 in Fig. 88, or a flat varnish brush, as at 3. Varnish tools (4) are also made. The house painter, whether for external or internal varnished

work, should procure his varnish from a good house, and have the best quality the job will afford. Varnishes differ much in quality, and some of them are almost worthless. Hard copal varnish is the best, and also the most expensive. This is the fine varnish with which the coach painter gets such a splendid hard and glossy surface on the bodies of

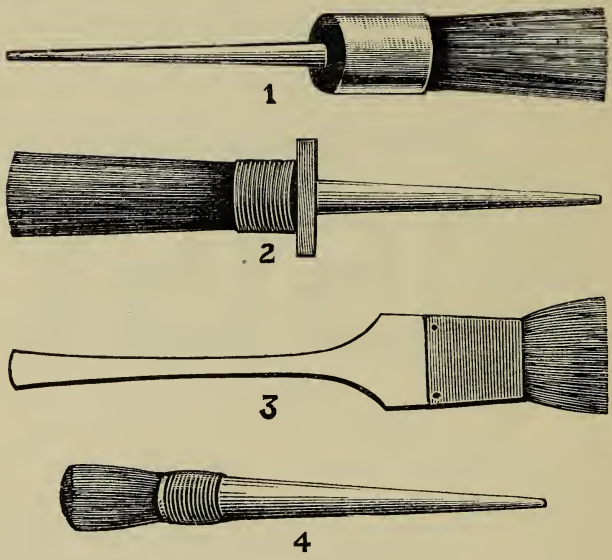


FIG. 88.—Varnish Brushes.

carriages. Varnish should be laid on thinly and evenly, and, above all things, the painter should never add either oil or turps to it, or he is sure to greatly deteriorate or probably utterly spoil his varnish. As we do not advise the manufacture of varnish—which is a difficult process—by the house painter, so we refrain from giving any recipes, though there are many such which could have been included herein.

Having now come to the end of our subject, the writer ventures to express the hope that the preceding chapters have been of some service to that class for whose benefit they were written—namely, apprentices, improvers, and young men and tradesmen in country towns.

THE END.

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